Statement of Work

GLENN RESEARCH CENTER

PROFESSIONAL, ADMINISTRATIVE, COMPUTATIONAL, AND ENGINEERING SERVICES CONTRACT (PACE IV)

1. Introduction

1.1. Goals and Objectives

The primary goal of this contract is to provide the highest quality products and services in all areas of information technology, information management, multimedia to the NASA Glenn Research Center at Lewis Field, Cleveland, OH, (GRC) and its associated sites and facilities (Plum Brook Station, Sandusky, OH), and other areas as specified in core work areas and IDIQ task orders. Another goal of PACE IV is to provide products and services that result in a high level of customer satisfaction. The OCIO objectives related to meeting these goals are to:

- Deliver IT services from a shared pool of resources and expertise
- Improve sharing, teaming, and use of common processes
- Ability to quickly and cost-effectively adjust to peaks and valleys of work load, technology, and funding
- Enhance commonality in approaches to product and service delivery including standards, tool sets, guidelines, training, and consultation
- Leverage efficiencies in service delivery and contract management identifying and prioritizing areas for improvement
- Provide greater accountability and consistent support for end-to-end product and service delivery
- Partner with our customer community through a well-structured customer service approach
- Institutionalizing configuration and change management throughout the OCIO

1.2. Scope

This Statement of Work defines the requirements for technical tasks to assist the GRC in meeting the objectives of its research, development, engineering, and institutional support activities. These requirements include, but are not limited to, technical tasks (defined in Section 3) in the areas of Computer Science, Computer and Software Engineering, Security, Networking, Application Development, IT Project Management, and Web Services.

The IT Services outlined in this Statement of Work support the diverse missions, programs, and institutional activities across GRC's scope of involvement in NASA functions. IT Services delivered through PACE enable GRC to execute NASA's missions and programs from a variety of NASA locations, with primary services delivered from Glenn Research Center at Lewis Field and Plum Brook Station. This contract co-exists with other IT contracts, most notably the Agency I3P contracts. Specific work locations will be defined in each task.

The Contractor shall comply with all applicable Federal, NASA, and GRC policies and procedures.

2. Management and Administration

The Contractor shall provide the management and administrative functions required to satisfy the requirements of this contract. The Contractor shall submit a Management Plan that defines how the Contractor will manage their day-to-day operations. The Contractor shall manage in accordance with all applicable Federal, NASA, and GRC policies and procedures.

The Contractor shall assist with the consolidation and potential migration of elements of PACE to applicable Agency-wide IT contracts. The Contractor shall assist with the consolidation and potential migration of IT services from other GRC contracts into PACE.

The Contractor shall obtain security clearances as required for work on this contract. As a result of the nature of the work, the Contractor shall accommodate nonstandard working shifts as defined by specific tasks.

2.1. Health and Safety

The Contractor shall submit a detailed safety and occupational health plan within thirty (30) calendars days after award in accordance with NPR 8715.3 and section H of the solicitation. This plan, as approved by the Contracting Officer, will be incorporated into the contract.

2.2. Work Authorization

The Government shall use a combination of defined core work areas and IDIQ task orders to authorize work under this contract. The Contractor shall provide a Work Management System (WMS) for processing core work and IDIQ task orders. The tasks will specify requirements, schedules, deliverables, and required skills.

The "authority to proceed" process is managed through the WMS provided by the Contractor. The Contractor shall ensure that its internal work management and tracking systems integrates with OCIO processes for the purpose of receiving work requests and providing order status and tracking information to the Government. The Contractor shall provide the WMS for tracking the costs associated with projects including labor, materials, travel, training and other direct and indirect costs and report this information monthly with the NASA Form 533 Supplemental Reports.

2.2.1. Work Management System Support

The contractor shall provide the WMS for managing PACE IV core work areas and IDIQ task orders. This system shall be production ready and user friendly at the beginning of the performance period. All data is and remains the property of NASA. At the end of the contract, the Contractor shall provide NASA with data in a government specified format.

The Contractor shall meet all requirements and provide support in accordance with Appendix A, Work Management System Support.

2.3. Resources Management

The Contractor shall create, modify, maintain, and report resources information in accordance with Section G of the solicitation, with the Management Plan, and other requests for data requested by the Government.

The Contractor shall conduct an annual internal contract-wide requirements and resource review. The Contractor shall present the results of this review to the Government and shall include recommendations for current and subsequent fiscal year (FY) contract resource requirements. This internal review shall be completed prior to the annual Capital Planning and Investment Control Process (CPIC).

2.4. Risk Management

The Contractor shall assess, evaluate, document, and manage risks associated with the performance of this contract. The Contractor shall create, modify, maintain, and implement a contract-wide Risk Management Plan per NPR 7120.7, NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements, and NPR 2810.1.

2.5. Property Management

The Contractor shall comply with Government-specified requirements for property management (Sections G and H of the contract) and perform property custodial functions for the Government

furnished property per NPR 4200.1, NASA Equipment Management Procedural Requirements, and NPR 4200.2, Equipment Management Manual for Property Custodians. The Contractor shall use a Government specified application as a tool, or set of tools, to administer Government property. In accordance with Section G of the solicitation, the Contractor shall conduct inventories of the physical property.

In addition, the Contractor shall keep a complete listing of all hardware systems and the software/firmware residing on those systems (e.g., operating systems, middleware, and applications), physical location of those systems, and documentation describing the interrelationships between individual systems and facility infrastructure. The Contractor shall provide a tool to establish and maintain an accurate inventory of hardware and software. The system shall be operational at the start of the contract. The system shall be used to provide monthly, quarterly, annual, and multi-year (seven-year projection) reports of hardware and software renewals or replacements.

2.6. Records Management

The Contractor shall maintain records appropriately and administer the disposition of records and non-records in accordance with NASA Records Retention Schedules, which has been approved by NASA and the National Archives and Records Administration.

2.7. Procurement

The Contractor shall procure and deliver services, equipment, materials, IT hardware, license renewals (software, production music, etc.) and media at the request of the Government. Before a non-emergency IT purchase is made, the Contractor shall verify whether or not an IT Security Plan exists for the item. Before a non-emergency IT purchase is made, the Contractor shall obtain approvals from the System Owner of the system, the Technical Monitor of the work area or task, and the GRC OCIO IT Purchase Approver. For emergency IT purchases the Contractor shall notify the System Owner of the system, the Technical Monitor of the work area or task, and the GRC OCIO IT Purchase Approver after the emergency has been abated. The Contractor shall also purchase hardware maintenance agreements and software support contracts associated with the new IT being purchased. When required, the Contractor shall purchase software licenses and media from vendors that have Enterprise License Agreements (ELA) already established with NASA.

As part of the procurement activity the Contractor shall ensure that its hardware and software inventory be updated. The Contractor shall ensure that maintenance and obsolescence schedules are updated as changes in the hardware and software inventory occur. The Contractor shall ensure additions and deletions are posted to the appropriate property management tool (see Section 2.5) within seven calendar days from the change.

The Contractor shall be responsible for the renewal of hardware maintenance, software licenses, and software support contracts for the systems specified in this contract, both IT and multimedia. The Contractor shall maintain complete purchasing documentation for all articles purchased under this contract. The Contractor also shall track proofs of purchase for all hardware warranties, software licenses, and software support contracts managed through this contract. The Contractor shall negotiate and establish maintenance agreements and software license renewals with vendors and report status of this activity. The Contractor shall inform the Government a minimum of 90 days prior to expiration of agreements.

The Contractor shall provide monthly reports on License Renewal and Maintenance agreement changes for the hardware and software items maintained in the contractor-provided property management tool (see Section 2.5).

2.8. Configuration Management

The contractor shall perform service asset and configuration management (SACM) functions for PACE-managed environments. The contractor shall prepare, implement, and maintain a SACM Plan within 60 calendar days after contract award.

The contractor shall create new and maintain existing system architecture and as-built drawings for all PACE-managed environments in conformance with GRC drawing standards. When making changes to configuration items, the contractor shall adhere to the GRC Information Technology Change Management Process. The contractor shall provide and use an online Configuration Management Database (CMDB) to identify, maintain, track, and report all PACE-managed configuration items (CIs), including Government-Furnished Equipment (GFE). The Contractor shall update the CMDB with current information after receiving, installing, modifying, relocating, refreshing, or excessing CIs. The Government will have full access rights to all data in the contractor's CMDB thereby requiring that the design of the database facilitate the export of data to Government CMDBs.

The contractor shall perform SACM functions in coordination with GRC IT configuration management officials and ensure conformance with evolving IT standards and guidelines, such as ITIL V3. The contractor shall conduct a bi-annual audit to verify all configuration items are properly recorded in the CMDB.

The Contractor shall track information in accordance with Appendix B, Configuration Management.

2.9. Quality Management and Control

The Contractor shall document key processes and procedures using GRC-approved International Standards Organization (ISO) formats where required. The Contractor shall be responsible for acquiring and maintaining the skills and expertise necessary to perform the requirements of this contract and maintain currency with relevant and applicable industry trends.

2.10. Project / System Integration

In accordance with NPR 7120.7 and NPR 7150.2, the Contractor shall integrate all multi-disciplinary activities associated with a project. Project development and implementation within this contract often requires contributions from varied technical disciplines. The Contractor shall institute a process that provides a single point of contact (lead) for a particular project as well as help unify all of the varied contributors into a single team. This lead will serve as the primary communications channel to the Government for the implementation of the particular project.

3. Information Services

The Contractor shall perform IT project management, engineering, scientific, technical, administrative, and related tasks issued hereunder by the Contracting Officer (CO), or the CO's authorized representative. These activities fall into broad categories as outlined below, but need not be limited to the activities noted. Individual task requirements may involve any or all categories of activities.

For each task the Contractor shall be responsible for estimating costs, establishing budgets, developing a major milestone schedule, monitoring progress against plan, identifying problems, and taking appropriate corrective action. These responsibilities are in addition to the execution of the technical requirements.

The majority of the work shall be accomplished onsite in various locations across GRC. Certain tasks may benefit from offsite delivery models (e.g., transactional, short-duration tasks; subject matter expertise reachback). Travel to other locations may be required. Core work areas and IDIQ task orders will specify the availability of Government facilities, laboratories, equipment, and support services.

Work performed under this contract shall be in accordance with established and applicable Federal, Agency and GRC documents including Business Management System (BMS) procedures and directives for requirements, standards, specifications, and instructions such as environmental impact statements, safety, reliability, quality assurance, security, and engineering standards.

The Government reserves the right to issue tasks for any or all of the scope of work indicated in this SOW. There is no guarantee that specific tasks will be written for all elements. The work requirements are not listed in priority order and no significance should be implied by their relative position in this document. References to GRC include both Glenn Research Center at Lewis Field, Plum Brook Station and when required, Aerospace Park. For the purpose of this SOW, the following definitions will apply:

a) Continuous operational coverage will be used to describe on-site support that is expected to be performed 24-hours-per-day, 7-days-per-week, including holidays.
b) Core hours will be used to describe coverage expected on weekdays from 7:00 a.m. until 5:30 p.m.
c) Extended business hours are defined as business hours that occur beyond the core hours.
d) On-call support will be used to describe support that exists when a contractor's physical presence is not necessary, but they must be reachable via phone or paging device. In many cases, it is required that contracted personnel be available throughout the "on call support" period to come in to the work location and provide physical support.
e) As-needed support will be used to describe support that that is not required on a full time or on a routine pre-scheduled basis but is provided as required to support the project when requested by the Task Monitor (TM) or the COR.
f) Desk-side support will be used to describe coverage the will be provided to a customer in which the contractor must be physically present at the customer's work location during a specific event or time.

3.1. Planning and Integration

The Contractor shall conduct planning for the development and implementation of new system capabilities; perform studies, market surveys, and benchmarking as directed; and make recommendations for new and improved capabilities, as well as for technology infusion and obsolescence management. The Contractor shall regularly evaluate all Government-provided tools and recommend changes.

Planning and Integration shall involve all disciplines within OCIO and associated IT and multimedia components.

When requested by the Government, the Contractor shall provide technology assessments, proposals, and/or cost estimates. These may address a state of technology, infrastructure or application enhancements, service concepts, and/or technology trends. The Contractor shall follow NPR 7120.7 during system engineering efforts.

Several areas within this contract require the implementation of projects. In each area, specific steps are provided to allow tracking and review of the implementation of these projects to assist NASA with an understanding of resource utilization, cost and other factors. At the Government's direction, milestones shall be incorporated into appropriate plans.

The Contractor shall perform integration analyses and make recommendations to the Government regarding technology selection and implementation alternatives to ensure the compatibility of developed systems with applicable GRC and NASA standards for software and IT security.

3.1.1. Capital Planning and Investment Control (CPIC)

NASA must establish and maintain a CPIC process that links mission needs, information, and IT in an effective and efficient manner. The Center's Information Resource Management strategy must align with NASA's vision, mission, and strategic goals.

The CPIC process defines how NASA will select IT capital investments; how capital investments, once initiated, will be controlled to achieve intended cost, schedule, and performance outcomes; and how NASA will continue to evaluate performance once a project is operational.

The Contractor shall support the tasks 3.1.1.1 through 3.1.1.5 described below in accordance with GRC CPIC processes, policies, and procedures relating to Agency IT management, budget execution and Office of Management and Budget (OMB) reporting requirements (OMB Circular No. A-130, Management of Federal Information Resources).

3.1.1.1. Exhibit 300 Support

An Exhibit 300 is an OMB IT budgetary requirement that provides an extensive narrative of a specific IT investment (system) which includes, for example, the IT investment's mission, goals, risk management, financial, enterprise architecture, and budgetary requirements.

The Contractor shall review all GRC submitted Exhibit 300 documentation for quality control in accordance with OMB Circular No. A-11, Part 7, Section 300-Planning, Budgeting, Acquisition, and Management of Capital Assets, and shall document all findings and recommendations for improvement. The Contractor shall provide subject-matter expertise to GRC organizations responsible for developing Exhibit 300s.

The Contractor shall ensure all required data is entered into the Agency Exhibit 53 and 300 tool in alignment with the Agency Planning, Programing, Budget, and Execution (PPBE) schedule.

3.1.1.2. Summary Investment Business Case (SIBC) Support

The Contactor shall support the Summary Investment Business Cases (SIBCs). The SIBCs are IT investment data entered into an Agency IT investment management system, as described in the OCIO Investment Management System (IMS) and IT SIBC User Guide. These tools are determined by the Agency and tend to change with time.

The Contractor shall compare current year SIBC data with prior year SIBC data and document those differences. The Contractor shall prepare ad-hoc queries, management briefings, and periodic reports.

The Contractor shall provide subject-matter expertise to GRC organizations responsible for developing SIBCs.

3.1.1.3. IT Planning Support

The Contractor shall support the GRC IT planning process by assisting GRC organizations in developing their yearly IT plans in conjunction with their CPIC inputs in accordance with OMB Circular No. A-130. The Contractor shall build and populate databases that represent each GRC organization's IT Plan for the upcoming fiscal year. The Contractor shall update SIBCs when developing these IT Plans.

Once the plans have been approved, the Contractor shall track organizational adherence with the plans, report compliance to OCIO and assist OCIO in ensuring that the GRC organizations follow the GRC IT governance process for obtaining approval on any new requirements.

3.1.1.4. Monitor IT Purchase Requests (PR)

The Contractor shall provide support for monitoring Center-level IT PRs. The Contractor shall ensure all IT SAP PRs and Enterprise Service Desk (ESD) approvals and Bankcard audits are processed in the appropriate system. The Contractor shall apply CIO defined governance process to IT investment management as specified by the OCIO Business Manager. The Contractor shall support GRC's interactions with the ESD approval process.

3.1.1.5. Monitor and Audit Bank Card Purchases of IT Products

The Contractor shall provide support for evaluating Bankcard purchases of IT assets across the Center on a monthly basis for the IT charge codes for hardware, software and other purchases. Ensure purchases are in compliance with the OCIO and GRC Procurement Office processes and procedures. Support the application of the IT Investment governance process to the purchasing of hardware and software using bankcard.

3.1.2. Integration Office and Project Management Support

The Contractor shall provide experienced IT project management expertise. Services shall include:

a) Assist in the development, automation, and adoption of IT Service Management processes including Service Portfolio Management, Project Portfolio Management, Configuration Management, and Issue Management. Key outcomes include: IT services that are aligned to the NASA mission and service delivery excellence.
b) Assist in identifying and developing project management methodology, best practices, and standards.
c) Coach, mentor, and train junior project managers.
d) Assist in monitoring compliance with project management standards policies, procedures, and templates via project reviews and audits.
e) Assist in developing and managing project policies, procedures, templates, and other shared documentation (organizational process assets).
f) Assist in coordinating communications across projects.
g) Assist in managing the methodologies, standards, and overall risks/opportunities and interdependencies among projects at the enterprise level.

3.1.3. Enterprise Architecture

The Contractor shall assist and support GRC in the alignment of IT investments to NASA mission outcomes through the practice of Enterprise Architecture and the guidance in NPR 2830. The Contractor shall assist GRC and the Agency Chief Enterprise Architect with documentation, business analysis, meeting logistics, and other general administrative activities. Track and provide consultation on development of the architecture and provide technical expertise as required. Maintain an in-depth awareness of the NASA IT Enterprise Architecture and identify opportunities for leveraging the standards and architecture efforts of the NASA

Emerging Technology and Desktop Standards (ETADS) team in support of the enterprise architecture.

The Contractor shall document the relationships between the business process and the technology assets managed in IT Portfolios defined by the OCIO (i.e., create linkages between business objectives and IT objectives). The Contractor shall work with the GRC OCIO to create metrics that accurately measure the impacts of architectural efforts on business operations, organizations, and GRC as a whole.

3.1.3.1. Enterprise Architecture Development, Technology Research and Infusion

The Contractor shall collect baseline information (artifacts and relationships) on GRC business activities, IT environments, data, and supporting current and emerging applications and technologies. The Contractor shall assist the GRC Enterprise Architect (EA) and Chief Technology Officer for IT (CTO-IT) in documenting, modeling, and analyzing the broad range of technologies, artifacts, and relationships to identify opportunities for streamlining, collaboration, consolidation, innovation, and technology infusion. The Contractor shall maintain these artifacts in the Agency's proposed EA Repository. The Contractor shall document both the current (As-Is) as well as the desired future (To-Be) business and IT environments across GRC. The Contractor shall complete a gap analysis between the current state and the desired state. The Contractor shall develop technology assessments and technology roadmaps and transition plans resulting from the completion of EA gap analyses. The Contractor shall support the research, investigation, prototyping, assessment, and evaluation of current and emerging information technologies. The Contractor shall support the CTO-IT in developing technology presentations, and planning and executing Technology Innovation Day exhibits and events.

The Contractor shall assist with documenting, controlling, and coordinating input to architectural artifacts of a minimum of six Architecture and Service domains within NASA's Enterprise Architecture. This support shall include, but is not limited to:

a) General business analysis
b) Stakeholder identification/coordination
c) Technical documentation development and management
d) Meeting logistical support (scheduling, notes, agendas, facilitation)
e) Presentation development
f) General administration activities

The Contractor shall attend and support Enterprise Architecture and CTO Working Group meetings/telecons, and attend travel face-to-face meetings when requested by the Government.

3.1.3.2. Enterprise Architecture and IT Portfolio Management Integration

With oversight from the GRC EA, the Contractor shall document the relationships between the business process and the technology assets managed in IT Portfolios defined by the OCIO (i.e., create linkages between business objectives and IT objectives). The Contractor shall work with the GRC EA to create metrics that accurately measure the impacts of architectural efforts on business operations, organizations, and GRC as a whole.

3.1.3.3. EA and CTO-IT Review Support

The Contractor shall work with the GRC EA and CTO-IT in coordinating and supporting Center and Agency Enterprise Architecture, technology assessment, and technology roadmap reviews for OCIO-identified IT projects and activities per NPR 7120.7 as described in NPR 2830.1.

3.1.4. Agency Standards Development, Maintenance, and Emerging Technology Assessments

The Emerging Technology and Desktop Standards (ETADS) group was established at the GRC to support NASA's OCIO. It consists of a state-of-the-art testbed facility, the Emerging Technology Assessment Facility (ETAF), and an experienced and diverse staff capable of understanding both the technical intricacies of modern operating environments and the complexities associated with NASA-wide implementations. The ETADS group supports the NASA CIO in ensuring that NASA's information assets are configured and managed consistent with Federal policies, procedures, and legislation and that the Agency's Information Resources Management strategy is aligned with NASA's vision, mission and strategic goals. Specifically, ETADS is responsible for developing Agency-wide desktop computing standards, providing an Agency mailing list service, and facilitating compliance with Federal Information Security Management Act (FISMA), Federal Identity, Credential, and Access Management (ICAM) initiatives, and United States Government Configuration Baselines. It produces NASA's basic interoperability standards (NASA-STD-2804 and NASA-STD-2805), and provides leadership in the areas of desktop smartcard integration and compliance with federal computer security configuration regulations, such as the Federal Desktop Core Configurations (FDCC). Systems expertise in the areas of architecture, standards, security, distributed systems, interoperability, virtual computing, collaboration, and others, will be applied to Agency wide efforts aimed at enabling NASA`s mission, enabling integration of business (mission) processes and information across organizational boundaries, achieving efficiencies and ensuring that IT is efficiently implemented, and implementing and sustaining secure IT solutions.

The Contractor shall facilitate NASA's continued compliance with Federal ICAM initiatives including Homeland Security Presidential Directive 12 (HSPD-12) and OMB-11-11 *(Continued Implementation of Homeland Security Presidential Directive* Policy *for a Common Identification Standard for Federal Employees and Contractors* by providing investigation, integration, and interoperability testing necessary to ensure that selected infrastructure and components for end user devices (smartcard readers, smartcard middleware, device drivers, public key infrastructure clients, system configurations, etc.) are integrated into the NASA desktop, mobile, and end user device computing environment.

The Contractor shall identify, evaluate, and pilot new and emerging technologies; maintain the ETAF and associated services; support the ETADS Technology Evaluation Library which enables end users from across the Agency to request new and innovated end user devices for evaluation.

The Contractor shall support the production of NASA's basic interoperability standards (NASA-STD-2804 and NASA-STD-2805), and provides leadership in the areas of desktop smartcard integration and compliance with federal computer security configuration regulations, such as the Federal Desktop Core Configurations (FDCC) and Agency Security Configuration Standards (ASCS).

The Contractor shall develop and maintain NASA's hardware and software interoperability standards. Research, recommend, promote, advertise, and revise Agency standards for Windows, UNIX, and Apple desktop system interoperability in support of Agency/Center CIO initiatives. This includes, but is not limited to standards for workstation configuration, host level security, system administration, and interoperability with other desktop environments.

The Contractor shall provide support to GRC's OCIO in various roles and responsibilities assigned by NASA HQ for the management of IT architecture and standards. Responsibilities include full life cycle requirements analysis, justification of new initiatives, advocacy, solutions

and implementation planning, procurement planning, standards development and measuring, and improving return on investment for large scale implementations.

The Contractor shall assist in identifying areas where IT costs can be reduced and controlled through business cases, and works with Center and Agency teams to develop and implement schedules for which IT standards and guidelines will be issued.

The Contractor shall facilitate NASA compliance with the FISMA by providing assessments, recommendations, processes, and procedures for secure operating system configuration.

The Contractor shall document, advertise, and promote workgroup standards and pilots as established by ETADS.

3.1.5. IT Service Management

3.1.5.1. Maintain IT Policies and Procedures

The Contractor shall implement the IT Policy and Procedures process as described by the OCIO Integration Office. This involves reviewing new or revised Headquarters' policy, OMB policy, other policies as appropriate, and Agency and Center procedures. The Contractor shall facilitate the drafting of policy and procedures, reviewing and disseminating new GRC policies and procedures or revisions, and providing weekly management reports of policies, procedures, actions, and change requests. The Contractor shall provide assistance in processing policy and procedures through the Agency and GRC policy review process. The Contractor shall provide support in summarizing policy and procedures, and ensure timely and accurate notification is provided via the GRC OCIO website.

The Contractor shall support the periodic IT policy and procedure reviews. This involves supporting the review of OCIO IT policies and procedures and ensuring they are brought into compliance with the most current requirements.

The Contractor shall implement the IT Policies and Procedures waiver process by following OCIO waiver processes. The Contractor shall facilitate the development and revision of waiver forms and waiver requirements as required. The Contractor shall assist GRC organizations through waiver processes including assisting in wording and processing of the waivers. The Contractor shall work with the appropriate OCIO boards and working groups in support of implementing waiver processes. The Contractor shall maintain an on-going log of waivers status. The Contractor shall ensure proper implementation of waiver processes including final signature authority from the CIO, or designee. The Contractor shall facilitate the auditing of waivers by identifying expired waivers and ensuring the appropriate action is taken to bring configurations into compliance.

3.1.5.2. IT Governance Support

The Contractor shall support the OCIO in planning, implementing and operating a comprehensive IT Governance structure at GRC. This structure ensures the implementation of Federal, Agency and GRC IT policy requirements in support of GRC Program and Project requirements. The core areas of emphasis to be addressed within the GRC IT Governance structure include documentation, processes and procedures, boards and working groups, roles and responsibilities, decision authorities, resources, implementations, training, and communications.

The Contractor shall be responsible for the following:

a) Updating the IT Governance structure documentation at GRC

b) Updating the IT Governance processes and procedures
c) Updating board and working group charters and their respective processes
d) Performing IT Governance operations which includes: recording meeting minutes, assigning tasks per the board direction, and auditing and closing actions from meetings, change management tracking system, waiver tracking management system

3.1.6. Configuration Management of IT Assets and Information

The Contractor shall provide support for IT Asset and Configuration management tools across the Center. The scope of this support shall, at a minimum, include:

a) Application configuration management
b) Account management
c) Customization of applicable content, modules, reports, and other related functions
d) Participation in Agency IT Asset Management periodic and ad hoc teleconferences and face-to face meetings
e) Provisioning of IT Asset and Configuration data/information in response to Government, Agency, and Center data calls

Under the oversight of the GRC IT Configuration Manager, the Contractor shall develop and maintain GRC policies, standards, processes, systems, and metrics that enable effective management of IT assets (hardware and software) with respect to risk, cost, control, governance, compliance, and business performance objectives.

The Contractor shall provide support to the OCIO to implement and maintain a repository of all GRC IT Assets, both IT Infrastructure Integration Program (I3P) and non-I3P. At a minimum, this repository will store hardware, software license, contractual, financial, and key personnel information about GRC's IT assets.

3.1.7. IT Vendor Management

The Contractor shall assist in the vendor management activities of the GRC OCIO. Identify opportunities for controlling cost, driving service excellence, and mitigating risks to gain increased value from GRC's IT vendors.

The Contractor shall assist in the development, management, and control of IT vendor contracts, relationships, and performance to improve service delivery efficiency. The Contractor shall assist in providing a GRC focal point for IT vendors to engage the Center in discussion of new products, product roadmaps, and partnership opportunities.

3.1.8 Data Call Support

The Contractor shall assist government personnel in completing all requests for data/information from or through, GRC, NASA Headquarters, and external Federal Government entities (e.g., OCIO, OMB, OPM, OIG). The Contractor shall log and track all data call products and provide final dispositions to specified GRC Government officials for reporting.

3.2. Applications Support

The Contractor shall provide support for all aspects of application development, including management of knowledge and information management systems, Web application development, mobile application development, desktop application development, scientific application development, database system administration, Web server system administration, application development tool system administration, and content management support on the NASA public portal.

The Contractor shall provide customer support, training, account management, and procurement for applications including Web Services; comply with OCIO Production Change Control Process; and adhere to standard OCIO notification processes for unscheduled outages of production services.

3.2.1. Application Monitoring and Administration

The Contractor shall provide life cycle support of enterprise and business application software in support of client/server, Web and Hyperion applications development. This includes, but is not limited to: software development tools, standard application development suites, and configuration management tools. The Contractor shall support business application software distribution on GRC's domain environment; research hardware and software upgrades. The Contractor shall maintain system and procedures documentation. The Contractor shall provide client/server application development and maintenance support, including migrating applications across environments, coordination with other GRC IT groups on networking, access, and other application-related issues, performance monitoring and tuning of software, and problem diagnosis and resolution.

The Contractor shall provide planning, documentation, and overall support for development, test, and production application environments. The Contractor shall create application sites/instances and migrate between environments.

The Contractor shall obtain and install SSL certificates. Support IP access control and Windows user authentication methods. The Contractor shall support Agency designated authentication and authorization methods, including NASA's Identity, Credentialing, and Access Management (ICAM) and Launchpad. The Contractor shall support Agency and Center sponsored application development and environment initiatives.

The Contractor shall install, support, troubleshoot and maintain the desktop, server, web, and mobile application development suite, which includes, but is not limited to, the following: ColdFusion, PHP, ERWin data modeling software, Serena Version Manager and Subversion source control software, WordPress, Drupal, and others as recommended by the contractor and defined and approved by the Government.

All software shall be at the current vendor's version within 6 months of release unless otherwise determined by the Government. Patches that represent a significant IT security risk are to be installed in line with the policies of NPR 2810 and IT Handbook ITS-HBK-2810.04-01A, Security Categorization, Risk Assessment, Vulnerability Scanning, Expedited Patching, and Organizationally Defined Values. Potential upgrades and replacements shall be researched for potential improvements and risks. The results of the research are provided to the Government for evaluation and decisions.

The Contractor shall document environment configuration and procedures pertaining to application environments. The Contractor shall provide environment troubleshooting and problem resolution, as necessary. Ensure that system functionality is maintained during core and extended business hours.

The Contractor shall track current technologies and trends as they related to desktop, server, web, and mobile application environment support. The Contractor shall provide recommendations and propose modifications to environment configuration based on analysis of these technologies and trends.

3.2.2. Web Application Governance

Web application activities and services shall be tracked and completed in accordance with the tenets of Project Management, in compliance with NASA standards in NPR 7120.7 and NPR 7150.2.

3.2.2.1. Portfolio Management

The Contractor shall support the development and maintenance of a portfolio of GRC-developed applications and websites. This portfolio will identify pertinent characteristics pertaining to the purpose, requester, development, and use of the applications and services provided.

3.2.2.2. Policy Compliance

Web Applications developed within this contract shall be developed in compliance with Federal, Agency, and Center required laws and policies including, but not limited NPR 2810.1A, Security of Information Technology NPR 1382.1, NASA Privacy Procedural Requirements, and NPR 7150.2.

3.2.2.3. Software Life-Cycle Management

NPR 7150.2 identifies the software development and engineering requirements for business and institutional software (Class F – General Purpose Computing Software [Multi-Center or Multi-Program/Project], Class G– General Purpose Computing Software [Single Center Project], and Class H – General Purpose Desktop Software). The Contractor shall implement industry best practices to manage the software development lifecycle in accordance with NPR 7150.2 and GRC's IT Governance practices. The GRC governance processes for classes F, G, and H of software are in development and should be in place by contract award.

The Contractor shall provide support for the design, implementation, configuration, testing, operation, maintenance and user support for a centralized version control system. This system will be used for source code, documents and test results. This includes the following tasks:

a) Provide support for a Web-based interface to the version control system
b) Ensure backups of data in the system
c) Add/remove user accounts
d) Setting permissions and roles on user accounts, as needed
e) If possible, integrate the system with any NASA standard provisioning and authentication systems (e.g. eAuth and NAMS)
f) Providing reports on system usage including storage space used, list of users, list of projects

3.2.2.4. Website Registration Process Support

The contractor shall support the Agency website tool and registration processes for web sites, web applications, and applications. Websites are entered and validated annually in the System for Tracking and Registering Applications and Websites (STRAW). This system requires registrants to enter information about their websites and verify that they are compliant with NASA polices. The Contractor shall support the STRAW system at GRC and will assist users with their registrations and the validation of the content. Additionally, the information shall be monitored to ensure that GRC remains compliant with NASA and Center policies regarding website registration.

3.2.2.5. 508 Compliance

The Rehabilitation Act Amendments of 1998 cover access to federally-funded programs and services. The law strengthens Section 508 of the Rehabilitation Act and requires access to

electronic and information technology (E&IT) provided by the Federal Government. Federal agencies must ensure that this technology is accessible to employees and members of the public with disabilities to the extent that it does not pose an “undue burden”.

Under the oversight of the Center Section 508 Coordinator, the Contractor shall support activities associated with Section 508 of the Rehabilitation Act at the GRC. This includes working with GRC organizations to complete a periodic Section 508 self-evaluation survey from the Department of Justice (DOJ) and assuring that these organizations fully comply with Section 508 when developing, maintaining, and procuring new E&IT products and services. The Contractor shall assist the GRC organizations in determining whether an E&IT product or service under review complies with the technical standards of Section 508. The Contractor shall provide guidance to GRC organizations in matters related to Section 508.

Individual content components must also be compliant with the mandates of the Act. In order to comply, documents, presentations, and other forms of content may need to be modified, in order to be accessible to users with disabilities. The Contractor shall assist organizations and users with making content accessible.

3.2.3. Web Site Development and Maintenance

The Contractor shall provide web page development, content reviews, and training in support for GRC Web content. Web sites are currently developed in many web programming languages, including HTML, HTML5, and PHP. Future web development activities are moving to Content Management Systems, including WordPress and Drupal. The Contractor shall ensure web pages are compliant with Federal and Agency Internet policies, including compliance with accessibility requirements. Web design and development activities should align with the tenets of responsive design.

3.2.4. Web and Applications Graphic Design

The Contractor shall provide services for electronic creation and manipulation of graphics products that support web application and mobile application development. The graphics development work requires specialized skills for creating and manipulating electronic formats and integrating them into web and mobile applications. The Contractor shall meet all Government and NASA regulations and policies in final products (e.g., NASA Insignia policy; Section 508 policy).

The Contractor shall interpret, incorporate, and analyze customer requirements to produce analyses, design, review, and layouts for websites and applications.

The Contractor shall produce and update graphics products using appropriate development tools. The Contractor shall develop new content and features utilizing current GRC themes, policies, messages, IT security requirements (NPR 2810.1), in accordance with NASA policies, and ensuring these are present and consistent in web and mobile applications.

The Contractor shall participate in customer development meetings and other activities as necessary to capture, consolidate, and document design concepts and requirements.

The Contractor shall be responsible for coordinating integration of products and information into websites and applications. The Contractor shall also be responsible for the archiving and data management of all products to facilitate retrieval.

3.2.5. Web Site Hosting as a Service (SaaS)

The Contractor shall provide services and support including procurement assistance, installation, repair, upgrades, customer support, preventive maintenance, and user account

management for all applications hosted by the Central Web Services Team including those used in the creation of Web content, checking quality and compliance of Web content, indexing and searching Web content, securing Web content, and applications used for providing Web site usage statistics, online calendars, and Web form information mailing.

The Contractor shall operate and maintain a suite of tools for the evaluation and management of the web environment. The suite includes, but is not limited to html validators, link checkers, web analytics tools, and site templates.

The Contractor shall coordinate services with the I3P contractors EAST, WEST Prime, ACES and NICS.

The Contractor shall support Web curators and sites on Center's Web hosting systems and assist curators in gaining access, developing, and deploying their sites.

The Contractor shall operate and maintain web content management systems (CMS), currently WordPress. Services include affinity kits, plug-ins, user management, maintenance of and changes to default configurations, transition of sites to the appropriate location (test, internal, external), and documentation and assistance with site implementations.

The Contractor shall provide support for application level service architecture (including security) development, investigation, installation, evaluation, testing and piloting of enhancements, replacements or additions to Web development and maintenance products, and recommend hardware/software/network configuration changes.

3.2.6. Custom Applications Development

The Contractor shall provide development, support and maintenance of desktop, server, web, and mobile applications on multiple platforms, including, but not limited to ColdFusion web based applications. The Contractor shall ensure that system functionality is maintained during core and extended business hours. The Contractor shall provide development support as required to maintain the applications and data integrity within those applications and resolve data interface issues. Provide development support to implement modifications per customer requirement changes. Provide support for replacement of applications by the NASA Enterprise Applications Competency Center (NEACC), eGov, and other initiatives including, but not limited to, data analysis, data mapping, data conversion, and documentation. Maintain existing application documentation.

The Contractor shall perform development activities including but not limited to developing schedules, identifying resource requirements, identifying and documenting operational concepts, gathering technical requirements, creating interface designs, developing data models, coding, testing and implementing software per GLPR 7150.1, OCIO, IT security, privacy, Section 508 accessibility and other GRC requirements. Provide configuration management and release support. Provide supporting documentation in support of these requirements.

In support of the environment for custom application development, the Contractor shall operate and maintain the development environment (ColdFusion) and associated databases (Oracle). These environments are to be maintained in accordance with NASA policies.

The Contractor shall ensure system functionality is maintained and software problems are acknowledged, addressed, and resolved promptly, in accordance with identified support metrics.

The Contractor shall track current technologies and trends as they related to desktop, server, web, and mobile application development and provide recommendations based on analysis of these technologies and trends.

The Contractor shall conduct customer interviews, collect and validate requirements, determine software development cost (including annual maintenance) and schedule, and manage the project using risk based project management methodologies.

Appendix C, Custom Applications Development Examples contains example application environments the Contractor shall support.

3.2.7. Scientific Applications and Services Support

The Contractor shall provide data visualization support and development, visualization facility support, interactive visual simulations, 3D model creation, Big Data analysis consulting and development, algorithm development, and scientific and visualization application development and tool support for technical computing work including high performance computing at GRC and the Agency. The Contractor shall provide visualization support for outreach events such as conferences and tours.

The Contractor shall provide support in accordance with Appendix D, Scientific Applications and Services Support.

3.2.8. Electronic Workflow Development and Business Process Automation

The Contractor shall develop, operate, and maintain electronic workflows within applications in order to automate Glenn business processes. Workflow development will require application development, potential integration with GRC web and business application systems, integration with GRC document management systems, digital signatures, and potential integration with electronic forms. The Contractor shall provide electronic workflows utilizing a software development lifecycle and adhering to the Agency and GRC standard procedures, processes, and products.

3.2.9. Serve and Manage Application Licenses

The Contractor shall assist in the ongoing management and consolidation of GRC Software Licenses. Promote efficient management, governance, and awareness of available licenses. Utilize expert knowledge, best practices, and tools to maximize GRC's license investments.

The Contractor shall provide support for managing GRC's allocation of Agency licenses. The Contractor shall interface with the central authority for various Agency licenses to represent GRC's interests and convey requirements. The Contractor shall also interface with key vendors and suppliers for efficient management of licenses and license agreements. Provide license tracking and reporting services.

a) The Contractor shall provide system administration, installation, and user support for an application provisioning system including the maintenance and operation of license management servers. This includes: Manage and maintain (e.g., monitor, track status, verify, audit, perform contract compliance, reassign, renew, reassign) software licenses and media through the software license life cycle
b) Work with the GRC IT vendor manager, configuration manager, specialized discipline POCs for Engineering and Scientific applications, and asset managers
c) Provide periodic and ad-hoc reports on current status of licenses and usage by user and application

d) Maintain a system to provision applications to users including a process to allow for approval by user's management, funding projects, Civil Servant Task Managers for contractor personnel, and discipline orgs for specialized applications. Integrate with existing NASA provisioning systems (e.g. NASA Access Management System (NAMS)), as needed
e) Periodically conduct software license and maintenance agreements reviews, allowing for sufficient time (at least 90 days) prior to expiration for discussions on renewals and discontinuance.
f) Identify and report any license compliance issues and provide recommendations to resolve the compliance issue

3.2.10. Commercial Off the Shelf Software (COTS) Configuration and Customization

The Contractor shall provide support for specialized configurations and customizations of COTS applications and software environments. The specifics of the applications and software environments to be supported will be defined in core work areas and IDIQ task orders.

3.3. Computing Services

3.3.1. Datacenter Management

The Contractor shall provide centralized hosting services focused on providing a modern, reliable and cost effective infrastructure for GRC applications and information repositories. The Contractor shall assist GRC in moving away from non-integrated hosting infrastructures towards a more efficient and functional hosting infrastructure. The Contractor shall be cognizant of emerging Agency and commercial hosting capabilities and leverage those capabilities when and where appropriate. The Contractor shall support the operation of existing GRC infrastructures, complying with IT security controls, defining common administrative processes and roles, consolidating servers, and finding and implementing operational efficiencies across the infrastructure.

The Contractor shall support the development of the future hosting services environment. This is to include cloud and virtualization capabilities that offer consolidation, elasticity, provisioning, transparent migration of applications between servers regardless of location, replication, and high availability configurations. Support working towards the development of an alternate processing site which is required by many of the GRC contingency plans.

The Contractor shall provide support in accordance with Appendix E, Datacenter Management.

3.3.2. Deliver Servers and Computing Facilities as a Service (IaaS)

The Contractor shall provide and support dedicated server, shared server, or VM environments, and associated storage environments, suitable for file sharing, application hosting, and web application and web site development and hosting. Services shall include, but not be limited to the following

a) Support multiple operating system environments
b) Support all operating system related services excluding OS related application
c) Install, configure, and support Internet Information Server (IIS), Apache, or other suitable web server

The Contractor shall provide limited system level support for select enterprise applications and services to include document management tools, collaboration tools, security tools, and applications, including, but not limited to:

a) Technical OS system administration relating to operational application support for both production and development systems
b) Service problem identification and resolution including monitoring, problem diagnosis, and problem resolution
c) Capacity planning support
d) Monitoring of system resources to forecast performance degradation at the application level. (e.g., Zenoss, PowerAdmin, Nagios)
e) Application, database, and data migration activities support
f) Application and database application related support activities
g) Archival assistance to service owners

3.3.3. Deliver Servers and Databases as a Service (PaaS)

The Contractor shall provide and support database instances including, but not limited to, the following platforms

a) Oracle (development, test, production)
b) Sybase (development)
c) MS SQL Server
d) MySQL

3.3.4. Server, Storage, and IT Facility Performance Monitoring

The Contractor shall provide the monitoring of IT facilities and IT components housed in IT facilities. Services shall include, not be limited to the following:

a) Hardware support and troubleshooting in conjunction with current vendor maintenance contracts
b) Hardware upgrades, as needed, based on existing refresh schedules, go-to architecture, and identified problems accounting for government budget considerations and future plans
c) Hardware purchases and licensing shall be coordinated with the NASA GRC Technical Monitor
d) Input and recommendations in support of a documented hardware refresh schedule.
e) System monitoring and proactive augmentation. All operational systems shall be monitored to the extent possible based on resources.

The Contractor shall provide a backup and restore capabilities that meet the requirements for NIST categorized systems in coordination with the GRC IT Security Program Office and GRC CISO/AO acceptance of residual risks. The backup capability shall meet the following criteria:

a) Daily incremental backups
b) Periodic full backups
c) Offsite backup storage
d) File restoration
e) Service restoration

Specific backup criteria, including frequency of full backups and restoration times, shall be determined based on individual system requirements. The Contractor shall provide Implementation and support for any backup hardware and software required to meet the above requirement.

The Contractor shall provide technical support to operate the IT Discovery and Applications Management System (IDAMS) hardware and software environment in accordance with Appendix F, IDAMS Support.

3.3.5. Server Administration

The Contractor shall be responsible for the administration and operation of server systems.

The individual components of a server system include, but are not limited to, server hardware, direct-access storage devices, racks, power distribution units (PDU), system software, virtual devices (servers, workstations, etc.), monitors, LCDs (liquid crystal display), power transfer switches, load balancer switches, and keyboard-video-mouse (KVM) switches. Some of these components may be combined into “clusters” to enhance system availability. The Contractor shall provide, install, maintain, and upgrade middleware used by the applications.

The Contractor shall provide support in accordance with Appendix G, Server Administration.

All server administration processes and procedures shall adhere to NASA and GRC policies.

3.3.6. Storage Administration

The Contractor shall be responsible for the administration and operation of storage systems.

The individual components of a storage system include storage arrays, physical tape libraries, virtual tape libraries; master backup servers, media servers, Fiber Channel switches, related Fiber Channel cables, backup tapes, storage management software, and backup software.

The Contractor shall be responsible for completing storage administration duties such as:

a) Provisioning and Implementing storage requests;
b) Coordinating storage activities with other Contractors as required;
c) Migrating data files between storage allocations;
d) Maintaining the configuration-managed architecture diagrams of the storage and backup systems; any changes to the architecture shall be documented within 30 business days;
e) Backup and restoring systems and servers;
f) Documenting and maintaining storage device configuration management. Any changes to the documentation shall be made within 10 business days;
g) Complying with all NASA IT Security policies (NPR 2810.1, FIPS PUB199);
h) Implementing all appropriate NASA IT Security procedures (NPR 2810.1, FIPS PUB199);
i) Maintaining an off-site storage capabilities for backup recovery;
j) Provide encryption for data transport and storage

All storage administration processes and procedures shall adhere to NASA and GRC policies and procedures.

3.3.7. High Performance Computing

The Contactor shall provide support for High Performance Computing (HPC) including: management of a high performance Linux Cluster, support of a high performance interconnect network, Linux system administration, installation of scientific applications, support developers of high performance applications, investigation of alternative high performance computing solutions such as cloud computing.

The Contractor shall provide support in accordance with Appendix H, High Performance Computing.

3.3.8. Database Administration

The Contractor shall provide Database Administration (DBA) for supported applications and database environments. This includes product level software installation and configuration, user identification management, release testing and verification, problem resolution, tuning, upgrading, patching, and startup and shutdown of the databases and backups. Support for planning and integration of activities with other contractors may be required. Examples of databases to be managed include Oracle, Sybase, Microsoft SQL Server, Microsoft Access, and MySQL.

The Contractor shall provide support in accordance with Appendix I, Database Administration.

3.3.9. Information Systems Engineering and Installation

The Contractor shall provide full life cycle support in the delivery of the IT products and services specified throughout Section 3. Utilizing NPR 7120.7 and other relevant NASA, Federal, and Industry standards, the Contractor shall develop and define project plans for new or existing IT systems. Develop high-level architectural and detailed designs, perform development, implementation, and testing of new or existing IT systems. Following guidelines and policies set in NPR 7120.8, manage the release, monitoring, and decommissioning of IT systems as part of GRC's IT Portfolio.

3.4. Content Management and Collaboration Services

The Contractor shall support a broad range of Agency and Center collaborative environments and tools.

3.4.1. Collaborative Tools

The Contractor shall support Knowledge Working Infrastructure (KWI) by providing the administrative services and adoptions services needed to support GRC offered and brokered collaboration tools and solutions. An awareness and knowledge of administrative services shall be required for cloud-based tools. Tools include vendor offerings aimed at content collaboration. Solutions go beyond the tools themselves and focus on the elements needed for successful adoption of the tool.

3.4.1.1. Management of Toolsets

The Contractor shall provide Knowledge Worker Infrastructure (KWI) application administration, and knowledge of administration practices, including Cloud-based solutions. The Contractor shall provide support which includes: application level design of services and supporting infrastructure; design and implementation of application level objects including rooms, sites, databases or other structured data, document types, and workflows; implementation of common objects and processes via templates, doc types, and other application level object reuse; application installation; application version upgrades; application problem resolution; and implementation of application security controls. Evolve KWI application tool set as NASA customer requirements and KWI project priorities dictate.

3.4.1.2. Tool Analysis and Adoption

The Contractor shall provide an assessment of collaborative tools in the marketplace. Tool assessment should relate to criteria identified by the Government to assure Center customers' requirements and NASA IT policies are met and followed. Assessments may include in-depth hands-on evaluation, third-party technology research whitepapers, and/or assessments conducted by peers within the Agency. Assessments shall support various Center use case scenarios.

The Contractor shall support KWI adoption by GRC and the Agency including: KWI web site(s) maintenance, presentations to existing and prospective customer groups, support customer adoption process and facilitation of KWI offered and brokered toolsets as needed for customer acceptance of said tools, provide customer forums that include training, and solicit customer feedback via surveys and other mechanisms.

3.4.1.3. Social Networking

The Contractor shall provide the access to tool(s) (on premise or in the Cloud) which foster the use of "community" to support profiles, information exchanges (ex. Discussions), and the generation of new content (ex. Wikis). These community networks will be structured to spawn innovation at the Center. The ideas and solutions leading towards innovation could be conceptualized internal to the Center, the Agency, or the external via the public ("crowdsourcing").

3.4.2. Document Management

The Contractor shall support document management capabilities. As the content management and application platforms modernize, the contractor shall integrate and support the myriad of information and content management capabilities.

3.4.2.1. Electronic Document Management

The Contractor shall implement a system for content management, preservation, and re-use of Center knowledge (both scientific and administrative). The system should lend itself for use for eDiscovery and Freedom of Information Act (FOIA) requests; capture and reuse of project documentation as well as structured content; electronic records management; management and analysis of scientific data/information; management of sensitive information shall be part of the system.

Overall the system shall provide a solution for cataloging/organizing Center information such that information is more readily found when needed. The Contractor shall develop a system or utilize an existing NASA or GRC knowledge architecture, including a defined taxonomy, for content organization. The Contractor shall implement a system to store the content with full accessibility, search-ability, and is intuitive for the user. Provision of an adoption and training program to encourage and maximize use of the tool is also required.

3.4.2.2. Content Management System (CMS)

The Contractor shall implement and sustain a Content Management System, on a Government-provided environment or in a Cloud-based solution, as specified in core work areas and IDIQ task orders. The Contractor shall ensure that the data stored within the system conforms to an appropriate GRC taxonomy. The Contractor shall provide recommendations to the Government on existing data or document collections to be migrated or linked to the content management system. The Contractor shall develop and implement processes and procedures for the creation and maintenance of new content as well as the migration of existing content.

3.4.2.3. Document and Data Scanning

The Contractor shall provide scanning of original documentation to electronic portable document format (PDF), or tagged image file format (TIFF) at the request of the customer, for storage, management, and distribution on such media as computer networks and compact discs. The Contractor shall index the compact discs and shall make the PDF files searchable.

Originals include documents, fiche, aperture cards and engineering drawings. Electronic originals may require conversion from one file format to another.

3.4.2.4. Electronic Records Management

The Contractor shall provide engineering, development, installation, and maintenance support for electronic systems that maintain electronic records appropriately and administer the disposition of records and non-records in accordance with NASA Records Retention Schedules, which has been approved by NASA and the National Archives and Records Administration.

3.4.3. Knowledge Management

Knowledge Management (KM) focuses on the policies, processes and practices that allow the Agency to identify and manage knowledge gained by its workforce in varied forms. KM specifically addresses how knowledge is created, retained, shared, and transferred throughout NASA and with its partners and contractors. Knowledge Management is critical for sustaining and expanding the use of the Agency's intellectual capital across NASA's enterprises and generations, increasing collaboration across barriers, and supporting the workforce in successfully carrying out NASA's missions. Each Center has a Chief Knowledge Officer (CKO) who reports directly to the Agency Chief Engineer. The Center CKO is responsible for overseeing the planning and execution of the Center's knowledge management activities and ensuring these activities are aligned with the Agency needs and policies.

3.4.3.1. Knowledge Tool Support

As directed by the Center CKO, the contractor shall provide support in the formulation, requirements development, implementation, and maintenance of Center and Agency knowledge tools, including but not limited to portals, document repositories, collaboration and sharing sites, video libraries as well as search/tag/taxonomy Tools.

3.4.3.2. Taxonomy Discovery and Formulation

Working with guidance provided by the Center CKO, the Contractor shall formulate a common taxonomy for use across Center institutional organizations. The Contractor shall lead the effort to apply this taxonomy within the OCIO use in support of records, documents, imagery and information sharing within OCIO. This taxonomy is to be used for tagging electronic information for improved search ability and categorization.

To develop this taxonomy the Contractor shall analyze existing GRC taxonomies used in support of records, documents, imagery and information sharing within OCIO, across other organizations.

The Contractor shall recommend a strategy for implementing the OCIO taxonomy and a workflow process for tagging electronic data in repositories, including for example, history portal, imagery repositories, and document indexes. The Contractor shall also recommend a strategy for implementing the common taxonomy across organizational boundaries.

3.4.4. Multimedia Repository Management

The Multimedia Repositories used by internal and external GRC customers comprise several different media collections that include audio, motion, and still imagery produced at GRC and acquired from other sources. The Contractor shall maintain all audio and imagery meeting the criteria for permanent or temporary retention, recorded, created, or acquired at GRC. The Contractor shall support storage growth, searching, metadata tagging, and indexing. Media acquired from other NASA Centers or other NASA-sponsored projects shall be included in the collection when appropriate. The Contractor shall ensure that imagery products are maintained in the formats and quantities necessary to fulfill requests from GRC and NASA projects, programs, and internal and external customers.

3.5. Enterprise Services

The Contractor shall support the Center in maintaining Agency and Center information systems.

3.5.1. Identity, Credentialing, Access, and Emergency Management

The Contractor shall provide system, application, user, and administrative support for Agency and Center wide systems and processes for physical and logical access management, authorization and authentication, and emergency management systems.

3.5.1.1. NASA Access Management System (NAMS)

The Contractor shall support GRC's utilization of the Agency NAMS. Services shall include, but are not limited to:

a) Perform provision, suspend, modify and de-provision requests.
b) Support NAMS activities, including participation in weekly telecons and workflow development, testing, and implementation.
c) Investigate Identity and Account management issues as requested.
d) Confirm incoming Summer Staff members have Domain and NOMAD accounts. If not, investigate the cause and perform the appropriate action.
e) Support information maintenance and assurance for all NAMS users interface related activities including IdMAX.
f) Support the Center's ICAM effort to migrate applications into NAMS.
g) Support efforts to identify the other applications that are not identified in NAMS so they can be incorporated into NAMS workflow and Launchpad environment.

3.5.1.2. Electronic Authentication and Launchpad

The Contractor shall provide technical IT expertise in support of the Agency eAuthentication and Launchpad initiative at GRC. The main objective is to transition/integrate local GRC Web Applications with the approved Agency eAuthentication service mechanisms. Services shall include, but not be limited to, the following:

a) Interaction and coordination with the Agency eAuthentication Launchpad team as well as the local GRC application owners, developers and database and system administrators.
b) Provide detailed technical expertise to advise, assist, consult, and support application owners on the programming and development methods to incorporate applications into Launchpad.
c) Support of Agency initiatives as they are developed and implemented at GRC as agreed upon with the NASA GRC Technical Monitor (TM)

3.5.1.3. NASA Enterprise Account Management

The Contractor shall perform user management functions as specified for each system, including the addition, modification and deletion of user accounts. These services included, but are not limited to, the following:

a) Perform role management as specified for each system including the addition, modification, and deletion of roles
b) Perform password resets for all designated NEACC related systems (ex., Core Financial and Business Warehouse)
c) Perform daily administrative functions such as run weekly reports to monitor invalid logins, comply with audit reporting requests, and coordinate separation of duties (role conflicts).
d) Respond to NEACC-related ESD Remedy Queue(s) in support of NEACC System security management and respond to user problems/requests identified therein

e) Provide user support and problem resolution during core and extended business hours.
f) Support Agency account management related initiatives by participating in telecons and face-to-face meetings and supporting the preparation of documents and presentation materials.

3.5.1.4. NASA Enterprise Directory Support (NED)

The Contractor shall respond to ESD Remedy Help Desk DBA queues, respond to problems/issues, including providing on-site core and extended business hour support. Implementation and support for the ICAM Interface Definition Agreement on the NASA Enterprise Directory (NED) shall be provided according the Center and Agency policies and projects. Information assurance activities include, but are not limited to, maintaining directory information such as locator information, NAMS User/Sponsor associations, organizational mappings, and other ICAM, HSPD-12, Agency, and Center related directory information.

The Contractor shall support Agency directory related initiatives by participating in telecons and face-to-face meetings and supporting the preparation of documents and presentation materials. Participate in the OCIO Configuration Control Board processes.

3.5.1.5. Support for Office of Protective Services (OPS) Systems

The Contractor shall provide IT support to the NASA Glenn Office of Protective Services. This will include support for Center systems and the implementation of Agency systems.

a) The Contractor shall provide systems and database administration for Center security information management systems and physical access management systems
b) The Contractor shall provide server administration, deployment, maintenance, assistance of a Lenel OnGuard Access Control/Intrusion Detection, Badging environment and support for video recording services for up to 100 cameras at GRC.
c) The Contractor shall provide technical support for NASA PIV II and associated Identity and Account Management systems in support of the Agency Homeland Security Presidential Directive 12 (HSPD-12).
d) The Contractor shall provide technical support for three OPS Emergency Management System Laptops at GRC which includes Microsoft Windows workstation administration, PowerBuilder/InfoBase application database supporting Emergency Management Operations, maintain Windows updates limited network access; maintain antivirus and other software updates. Backup image copies will be supported for Disaster Recovery purposes and the laptops will be rotated between GRC and PBS on a monthly basis.

3.5.2. NASA List Server Support

The Contractor shall provide system administration and user support for an Agency Mailing List Service which is used to facilitate agency communications and discussions. This includes, but not limited to the following:

a) Support and maintain list service technical infrastructure and servers
b) Create, modify, and delete mailing lists
c) Add and remove participants from mailing lists
d) Assist users with mailing list problems and questions

3.5.3. Mobile Management Services

A Mobile Management Services environment provides the application, data, device, and user level controls necessary to enforce security policies for Government and personally owned (BYOD) mobile devices (e.g., tablets, smartphones). The Contractor shall provide support for the evaluation, engineering, acquisition, installation, and operations of a Mobile Management

Services environment to securely manage mobile devices, deploy and manage mobile applications, support file synchronization, enable data protection, and centralized and user self-service capabilities in support of NASA's anywhere, anytime, any device mobile strategy.

3.6. Multimedia Services

The Contractor shall provide support for the scheduling, setup, user support, troubleshooting, equipment maintenance and reporting for GRC videoconferencing and collaboration facilities.

3.6.1. Video Conferencing and Collaboration Facility Support

The Contractor shall provide support to GRC's video conferencing rooms and facilities. Support services shall include setup, scheduling, user assistance, participant notifications, troubleshooting, maintenance, and reporting.

The Contractor shall provide support in accordance with Appendix J, Video Conferencing and Collaboration Facility Support.

3.6.2. Multimedia Engineering, Installation, and Maintenance

The Contractor shall perform minor and major multimedia engineering and installation projects, provide sustaining engineering and development engineering for multimedia systems.

The Contractor shall work with customers in the development and definition of project requirements for minor and major projects and sustaining engineering in cooperation with the designated Government project lead. For efforts which require an initial estimate, the Contractor shall provide brief requirements analysis and rough order of magnitude (ROM) cost estimate for the project.

For each minor or major project, sustaining or development engineering task the Contractor shall provide either an abbreviated or complete Engineering Project Plan, as specified by the Government.

The Contractor shall perform minor multimedia engineering and installation projects. Minor projects are smaller tasks that typically do not require significant planning, design or component fabrication effort. A minor project is typically one requiring 20 or less hours to complete and the material cost is valued at less than twice the cost of the associated labor. Typical minor projects include efforts to provide, assemble, install, and test certain small items of audio and video equipment in offices, conference rooms, and lobbies. Minor projects could involve the modification, relocation or removal of existing multimedia systems or equipment.

The Contractor shall perform major multimedia engineering and installation projects. Major projects are those tasks that require significant planning and effort to design, assemble, install and test multimedia systems. Projects may also include major changes or additions to audio and video networks or require integration with computer, network-based systems or applications. Most project components are commercially available, but some may have to be specially designed and constructed.

The Contractor shall implement major projects. Testing shall be performed as needed to confirm the proper operation of components and complete systems and that project operational requirements are satisfied. Clear and complete operating instructions shall be prepared and provided to the NASA customer. Major projects are considered complete upon Government approval of the Project Completion Review documentation (NPR 7120.7).

3.6.3. Multimedia Maintenance and Repair

The Contractor shall perform preventive maintenance (PM) on specific GRC multimedia equipment and systems. The Contractor shall provide analysis to NASA for identifying systems and equipment that require PM. The Contractor shall plan, establish, and conduct a PM program to ensure the reliable operation of all identified items and that the systems are functioning within required specifications. The Contractor shall determine the PM requirements for the identified items, including activities to be performed and schedules for those activities to be accomplished. The Contractor shall include these items in a Preventive Maintenance Plan and Preventive Maintenance Report. The Contractor shall submit a copy of these PM plans and procedures to NASA for review and approval, when they are initially prepared and when they are revised.

The contractor shall develop an obsolescence plan for multimedia equipment and systems. The plan shall identify and address equipment systems that will become unsupportable during the period of execution of the contract. The plan shall identify what upgrades are necessary to maintain the functionality of the system or suggest a replacement system. The Contractor shall submit a copy of the obsolescence plan to NASA for review and approval, when initially prepared or revised.

The Contractor shall repair GRC multimedia systems and equipment. Some identified items shall be repaired or replaced as needed to restore full operational capability in a timely manner. The Contractor shall notify NASA when the repair of an item is not considered to be cost effective and recommend if the item should be replaced.

3.7. IT Risk Management and Security Services

The Contractor shall support the Risk Management Office in the areas of Federal Information Security Management Act (FISMA) compliant security planning, incident response, operation and maintenance of the GRC network security environment, information protection, and IT security training.

The scope of IT Security tasks encompasses, but is not limited to, providing an available, highly reliable and secure Center-wide IT infrastructure by conducting new security product research, recommendations and implementation, system administration, incident response, and forensic investigations. Operations will focus on meeting the security requirements of the Center while maintaining a highly available and reliable network security infrastructure. Policy and planning in accordance to FISMA standards and regulations are within scope. The Contractor shall support duties relating to system certification and accreditation and the preparation of security plans.

Daily operation of security systems managed by the Risk Management and Security Office is required to maintain visibility of network and monitoring activities. Planning and active participation in data loss prevention is within scope of this task. Identification and protection of sensitive data being collected, used, maintained and disseminated by NASA is required in accordance with NPR 1382.

The Contractor shall follow all of the Policy Directives and Procedures and Guidelines as set by NPD 2810.1D NASA Information Security Policy, or subsequent versions.

Support for IT Security Training and Awareness includes consultation, delivery of training curriculum, courses and other materials, and outreach activities in accordance with FISMA. Periodic consulting services shall be required at the request of the Government.

The Contractor shall perform data management including maintenance work receipt and classification, scheduling, material inventory control, labor scheduling, work completion, work status, and report generation.

3.7.1. IT Security Engineering

The Contractor shall provide requested technical documentation for existing and future network security system designs of systems managed by the IT Security Office. The Contractor shall proactively work with other organizations as needed and under the direction of the OCIO.

The Contractor shall proactively assess and design network architecture changes involving the GRC IT security infrastructure, and implement under the direction of the OCIO. The Contractor shall conduct risk assessments for new architectures.

3.7.2. IT Security Management and Operations

The proper operations of all equipment and devices managed by the Risk Management and Security Office is required to maintain constant visibility of certain activities related to network traffic and web applications programming. Operation is performed in accordance with ITS-HBK-2810.18 System and Communication.

The Contractor shall manage and maintain all IT hardware, software, and data storage required by the Government and shall participate as a shared systems administrator on all applicable servers.

The Contractor shall provide support in accordance with Appendix K, IT Security Management and Operations.

The Contractor shall work with the existing I3P Contractor responsible for managing the perimeter firewall; content monitoring and filtering; remote access; and intrusion detection systems to share and integrate information which will contribute to the overall understanding and improvement of GRC's IT Security risk posture.

3.7.2.1. Traffic Capturing and Analysis

The Contractor shall install, operate, maintain, and monitor the traffic capturing and analysis systems consisting of hardened sensors placed on secure monitoring segments with access to key areas of network infrastructure to collect packet capture data, session data (for example, TCP and HTTP sessions), and URL requests and tuned to avoid packet loss.

The Contractor shall work with the existing I3P Contractor responsible for managing the network infrastructure to share and integrate information, which will contribute to the overall understanding and improvement of GRC's IT Security risk posture.

3.7.2.2. Vulnerability and Discovery Scanning

Perform vulnerability scanning and produce reports to meet the Agency quarterly scanning requirements. This will consist of monthly scans and quarterly reports.

Perform web vulnerability scanning and produce reports to meet with Center and Agency scanning reporting requirements and special projects and assignments. Scans should also be performed at the request of the systems and application owners.

3.7.2.3. Consolidated Logging

The Contractor shall provide system administration and analytics support to the existing SPLUNK and other centralized log repositories.

The Contractor shall generate and distribute automated daily summary reports to the appropriate Government and contractor personnel. Additionally, reports to GRC will be provided when threats or breaches are detected. Provide reports to external parties as directed by the Government. Provide data/logs or a secure interface to the information in response to requests from appropriate parties. Support shall include but is not limited to:

a) Provide system logs related to intrusion, security incidents and misuse cases.
b) Monitor critical logs for abnormal activity and that may adversely impact operations of the GRC perimeter.
c) Monitor critical logs continuously for abnormal activity and security threat.
d) Review logs on a daily basis.

3.7.2.4. Web Site and Application Security

The Contractor shall provide support for web site and web application vulnerability interrogation and scanning using tools such as the existing Hailstorm environment. Web site and application vulnerability identification shall also be identified through code reviews with application owners. The Contractor shall provide recommended fixes to application source code to application owners that will mitigate security vulnerabilities. These activities shall be performed periodically with schedules negotiated with the CISO and application owners.

The Contractor shall manage, configure, and administer the Web Application Firewall (WAF) environment by integrating web sites into this environment. Additionally, reports produced by the Hailstorm (or current web scanning tools) shall be incorporated into the WAF configurations to provide additional network-based web site protections.

The Contractor shall work with the Agency Web Application Scanning Program (WASP) to support and arrange scanning activities. The Contractor shall utilize findings of the scanning activity and work with application owners to mitigate web site and application security vulnerabilities.

The Contractor shall perform system administration and maintenance of the web scanning environment and submit recommendations to the Government on upgraded and new technologies which support web security.

3.7.3. IT Security Administration Support

3.7.3.1. Consultation and Outreach

The Contractor shall accept and respond to IT security-related requests by providing technical support to customers with the development of requirements for IT security solutions.

The Contractor shall provide technical expertise at both formal and ad hoc board meetings (for example, the Network Access Control Board (NACB)), forums, and working groups as required to assist the Government’s decision-making process.

3.7.3.2. Organizational Computer Security Official Support

The Contractor shall participate in periodic meetings with Organizational Computer Security Officials (OCSO) and assist the CISO in disseminating relevant IT security information to the OCSO community.

3.7.4. IT Security Incident Response

The immediate response and handling of IT security incidents is a requirement and should be followed in accordance with ITS-HBK-2810.09-02, Incident Response and Management: NASA Information Security Incident Management. Incident Response personnel shall conduct investigations, and submit findings under the direction of the Government.

The Contractor shall immediately notify the NASA Security Operations Center (SOC) in the event of any security incident and await instructions from the Incident Response Team (IRT). The GRC Center Information Security Officer (CISO) and Incident Response Manager (IRM) shall be provided formal notification, in writing, within twenty-four (24) hours after detection of the incident(s).

The Contractor shall conduct forensic investigations of suspected IT Security incidents under the authority of the Center's CISO or GRC IRM. This may include, but is no limited to monitoring the network, examining and mirroring hard drive files, conducting advanced digital forensics, examining email files, reviewing network and firewall logs, analyzing network traffic, disconnecting users' computers from the network, documenting the IT Security investigations per NIST SP 800-61, and providing testimony if required.

The Contractor shall report suspicious activities or investigation activities and results to the Agency Security Operations Center (SOC) and the CISO immediately. System logs related to intrusions, security incidents, and misuse cases shall be provided by the Contractor as directed by the Government.

The Contractor shall keep abreast of latest security threats and respond to any threats to the GRC network with continuous operation coverage and take the appropriate actions to notify the designated Government employee of threats. Take the necessary steps to prevent further damage or intrusion. Actions should be initiated within 6 hours of discovery.

The Contractor shall generate and distribute automated daily summary reports to the appropriate Government and Contractor personnel. Additionally, reports to Glenn Research Center shall be provided when threats and breaches are detected. The Contractor shall provide data and logs or a secure interface to the information in response to requests from appropriate parties.

The Contractor shall respond to data calls and review policies from the Agency, other Government organizations, and civilian authorities. Reports shall be provided to external parties as directed by the Government.

The Contractor shall hold and maintain GIAC Certified Forensic Analyst or GIAC Forensic Examiner certification.

3.7.5. Program Protection (Certification and Accreditation Management, Consulting, and Auditing Services)

The Contractor shall provide support for Program Protection in accordance to FISMA, NIST and NPRs. Specific duties include the following:

a) Support for the development, certification and accreditation of the GRC Common Security Control Baseline and consult OCSOs, system owners and system administrators of individual plans throughout the Center to meet FISMA compliance and reporting in accordance with the Federal Information Security Management Act of 2002 (FISMA).

b) Support Certification and Accreditation throughout its lifecycle, particularly in the Continuous Monitoring phase.
c) Track and assist GRC Organizations in the Security Planning process. Develop and maintain Center Master IT Security Plans and associated subordinate plans.
d) Facilitate and/or conduct IT security risk assessments for GRC organizations, as requested.
e) Conduct independent reviews and audits.
f) As directed by the Government under special circumstances, work with GRC customers to provide risk-mitigated solutions that meet their requirements while maintaining the security posture of GRC.
g) Perform analysis of FISMA, NPR, NIST, or other applicable documents or standards.
h) Work with Organizational Computer Security Representatives (OCSRs) to improve the overall security knowledge and posture of NASA GRC through layered defense strategies applied to systems within the GRC Network Perimeter.
i) Provide Configuration Management efforts as they relate to the Center IT Security Program.
j) Respond to data calls and review policies from the Agency, other government organizations, and civilian authorities.

3.7.6. Information Protection

NASA is required to protect the privacy of personally identifiable information (PII) collected, maintained, and disseminated, including information transmitted on NASA networks. Personnel working in Information Protection meet with various Information System Owners and application developers to assist them in completing assessments including, but not limited to, the Information Privacy Threshold Assessment (IPTA) that are made available to the Agency Privacy Program Manager. Routine assessments of how information is managed by a system are performed to ensure that handling of information conforms to the proper statutory, regulatory, and policy requirements in regards to privacy and privacy management. Work is performed in accordance with NPD 1382.17, NASA Privacy Policy, NPR 1382.1, NASA Privacy Procedural Requirements, and ITS-HBK-1382.03-01, Privacy Risk Management and Compliance: Collections, Privacy Impact Assessments (PIAs), and System of Records Notices (SORNs).

3.7.6.1. Controlled Unclassified Information (CUI) Program

Under the oversight and guidance of the Center Privacy Manager (CPM) and in accordance with NPR 1382.1, NASA Privacy Procedural Requirements, the Contractor shall support Center organizations in complying with the Privacy Act of 1974, the privacy provisions of the Electronic Government Act of 2002, the Children's Online Privacy Protection Act (COPPA), and the Office of Management and Budget (OMB) guidance on privacy.

The Contractor shall complete GRC responses to data calls and audits related to privacy to assist the Government in meeting all requests from NASA Headquarters and other federal government entities (OMB, OIG, OPM, etc.). The Contractor also shall support the completion of Information and Privacy Threshold Analyses (IPTA) and Privacy Impact Assessments (PIA) as described in NPR 1382.1 for Center organization IT systems and applications.

The Contractor shall support the completion and publication of System of Records Notices (SORNs) as described in NPR 1382.1 for identified Privacy Act Systems of Records.

The Contractor shall support activities related to reducing the GRC's use of personally identifiable information (PII) and eliminating its use of social security numbers (SSNs) as

described in ITS-PLAN 1382.1, NASA Plan for Reviewing and Reducing Personally Identifiable Information (PII) and Eliminating Unnecessary Use of Social Security Numbers (SSNs).

In the event of a suspected or actual security breach affecting PII, the Contractor shall support activities associated with the Center's Breach Response Team (BRT) related to matters associated with privacy.

The Contractor shall support the GRC Risk Management and Security Office with strategies, planning, and processes to adopt NASA's Controlled Unclassified Information (CUI) Program.

3.7.6.2. Privacy Protection

The Contractor shall provide support in preparing and reviewing metrics at the request of the Government. Provide and support consulting to the GRC community on systems containing PII and respond to data calls and review policies from the Agency, Government organizations, and civilian authorities. Assist in investigations of PII breeches when necessary and under the direction of the Government. Support routine inspections to ensure the proper disposition and/or sanitization for files and records that contain privacy information. Assist with approval of new and modified applications before applications are put into production. This shall be done in a timely manner. Respond to data calls and review policies from the Agency, other Government organizations, and civilian authorities.

3.7.6.3. Data Loss Prevention (DLP)

The Contractor shall provide administration, development, configuration, data review, analysis, reporting, and operational support for GRC's DLP environment. Currently, GRC has a DLP environment based on the Verdasys Digital Guardian technology. Specific duties include but are not limited to the following:

a) Implementation of hardware components to be integrated into GRC's current architecture.
b) Implementation and upgrading of any and all software, including updates, that is related to the DLP product[s].
c) Assist with customer concerns through both SOC and ESD ticketing systems, as well as any other form of communication.
d) Create DLP reports for the Incident Response Manager (IRM), and senior leadership.
e) Stay current with trends related to content management, with a focus on the Verdasys solution.
f) Perform review and deep analysis of logs, and reports that are generated from the DLP solution.
g) Modification and creation of controls, conditions, and signatures within the DLP solution, under the direction of the IRM.
h) Collaborate with Missions and Programs, IT Security, Office of Protective Services, Counterintelligence, and relevant law enforcement agencies to incorporate heuristics and taxonomies in the DLP solution

3.7.7. Information Technology Security Awareness and Training

The Agency Information Technology Security Awareness and Training Center (ITSATC) provides the Agency with tools to enhance knowledge and awareness of different aspects of IT security through andragogical methods. Work shall be performed in accordance with NIST SP 800-50, NIST SP 800-16, ITS-HBK-2810.0601 Awareness and Training, and ITS-HBK-2810.06-02 Awareness and Training: Role-Based Training Requirements.

The Contractor shall provide support in accordance with Appendix L, Information Technology Security Awareness and Training.

The Contractor shall hold a degree in Information Technology or a related discipline, Education, Mass Communications or Marketing or hold an appropriate certification. The Contractor shall be customer oriented and demonstrate the ability to appropriately analyze, interpret and discuss complex technical issues as related to IT Security.

3.8. Specialized Information Systems

The Contractor shall provide integrated services for highly specialized and/or unique systems. These systems evolve over time. Current systems and environments are described within this section. The services may require multi-disciplinary skills across various sections in this Statement of Work.

3.8.1. Advanced Networking and Communications

Work in this area will address the Information Technology (IT) requirements which are unique to the space and mobile communications mission work being done at NASA GRC. Task will tap into a wide range of IT expertise including communications systems engineering, software engineering, high end computing, and computer graphics required for mission support for the Agency and GRC.

3.8.1.1. Space Communications

The Contractor shall provide architecture development, analysis, design, and engineering to meet a wide variety of communications requirements for IT security and networking.

The Contractor shall support hardware development activities in GRC communications test beds. Review lower level communication system requirements documents for correct compliance and flow-down from higher level documents. Special attention is required regarding system/ communication security for both network and data involving transmission, protection, access, and integrity. Activities will address delay/disruption tolerant networking protocols and performance optimization/ characterization of industry data communications protocols for Internet access to space-based networks.

The Contractor shall support the Space Operations Project Office and Space Communications Office by integrating project and office data using advanced computing skills and IT tools for the purpose of strategic analysis and response to the program office requirements. The skills and knowledge required for this task include technical communication concepts, advanced computing skills, graphical representation of complex data, and presentation of management level technical concepts. Knowledge and use of computing platforms, IT procedures, processes and GRC project management IT systems is essential. Additional responsibilities include maintaining the organizational document repository, collaboration environment, and knowledge of the programmatic IT environment.

The Contractor shall develop and promote Communications facility capabilities in support of program advocacy, education and public awareness of the program missions. Coordinate and manage the program's participation in outreach events. Coordinate design and facilitate IT program exhibits and outreach materials. Oversee logistical requirements for off-site events including registration, equipment logistics, and event promotion. Outreach activities can also include: web services, video conferencing, e-business, and simulation and emulation labs.

The Contractor shall provide IT and project management support of projects within Space Communications Project Office as required by Project Managers. Support technical meetings and project reviews as required in NASA NPR 7120.5 Space Flight Program and Project Management Requirements.

3.8.1.2. Aircraft Mobile Communications

The Contractor shall support specific networking and protocol areas to further the research and development of current and emerging air/ground and satellite information systems.

The Contractor shall support research focused on future voice and data communication system concepts and operational profiles to enable unmanned aircraft systems (UAS) to safely communicate with ground controllers in support of the research, analysis, and development of networked communication systems to enable the safe operation of UAS in the National airspace.

The Contractor shall develop mobile networking technologies, information delivery protocols, and secure, autonomous, machine-to-machine communication and control technologies to enable a communication system for secure reliable data delivery and remote communication between a UAV and ground systems.

The Contractor shall support the security analysis of proposed technologies in support of the design, implementation and testing of C-band communications network as part of the Aeronautical Mobile Airport Communications System in support of the FAA's Next Generation Air Transportation Management System.

3.8.1.3. NASA Space Delay/Disruption Tolerant Network (DTN) Readiness Project

The DTN Readiness Project is within the NASA Space Operations Mission Directorate (SOMD). The Contractor shall provide support for specific networking and protocol task areas to further the research and development in specific areas of interest as defined in the detailed tasks below:

a) Assist GRC personnel in implementation and maintaining the DTN
b) Assist GRC personnel in utilizing the OpenNet for DTN research
c) Provide an analysis of what DTN metrics to measure and how to measure them
d) Develop Network Management Tools (Applications), including DTN Simple Network Management Protocol (DTN-SNMP) and DTN performance test and analysis tools (for example: iperf or nuttcp for DTN)
e) Assist in analysis and development of security mechanisms and protocols for DTN

3.8.1.4. Multi-Purpose Crew Exploration Vehicle – Orion Onboard Data Network Support

The Multi-Purpose Crew Vehicle (MPCV) Project is part the Human Exploration and Operations Directorate. Glenn has been assisting Johnson Space Center and its Prime Contractor for the MPCV in the Design, Development, and Deployment of the Onboard Data Network (ODN). NASA is currently construction of the Exploration Flight Test 1 (EFT-1) at Kennedy Space Center for launch in 2014, and is in Design with the European Space Agency for the follow-on launch of EM-1 in the 2017 timeframe. The Contractor shall provide continuing support to the ODN team for these missions, and shall require full working knowledge of the Time-Triggered Gigabit Ethernet technology as it is being implementation on the EFT-1 Orion spacecraft. Detailed tasks shall include:

a) Utilizing knowledge in physical Layer 1 Space Environment wiring and interconnections, assist in the design, development, and monitoring of current and future ODN cable plant.
b) Assist the ODN Team in the efforts to monitor and characterize the ODN performance in NASA labs, prime contractor integration labs, on the launch pad, and in space.
c) Utilize the requisite expertise of the ODN architecture to document and analyze networking requirements, contribute to, and evaluate the proposed EM1 design.
d) Participate with standards bodies to promote the Time Triggered Giga Bit Ethernet protocol as an international standard.
e) Software development and support for Time-Triggered Gigabit Ethernet network management code.

3.8.1.5. Unmanned Aircraft Systems (UAS) in the NAS/NextGen Support

The Contractor shall support the Unmanned Aircraft Systems (UAS) in the National Airspace Systems (NAS). The Contractor shall provide specialized network communications research and analysis necessary to support the flight of UAS in the NAS.

The Contractor shall provide support for future voice and data communications systems concepts and operational profiles to enable unmanned aircraft systems to safely communicate with ground controllers. The Contractor shall support the research, analysis, and development of networked communications systems to enable safe operation of UAS in the National airspace.

3.8.2. Data Science and Management Support

The Contractor shall provide support for Big Data and Advanced Analytics for all areas of NASA work including IT security, research and facility data, and IT data. This support includes, but is not limited to:

a) Strong programming skills in a variety of languages relevant to processing large volumes of data
b) Skills to bring structure to large quantities of formless data and make analysis possible
c) Identify rich data sources, join them with other, potentially incomplete data sources, and clean the resulting sets
d) Help decision makers by communicating results
e) Strong mathematical and computing skills
f) Big Data frameworks and tools such as Hadoop/MapReduce
g) Visual analytics
h) Strong communication skills
i) Working with customers to understand requirements
j) Create a rich toolset that enables others to work with data effectively

3.8.3. Test Facility Support

The Contractor shall provide Information Technology (IT) and electronic support for experimental test facilities at NASA Glenn Research Center at Lewis Field and Plum Brook Station, in support of its data systems, control systems, and instrumentation systems. These responsibilities include; but are not limited to: installation, maintenance, repair, calibration, operation, logistics, procurement (including maintaining vendor relationships), IT security, specialized administration, and development of test facility and/or experiment related IT systems and/or services.

The IT and electronic support required is for dedicated, typical IT systems (including reference/support systems and development environments) for fifty (50) plus experimental test facilities at Lewis Field and Plum Brook Station supporting Aeronautics and Space programs with varying security requirements (Federal Information Security Management Act (FISMA) – Low, Moderate, and High Impact Levels, and Classified).

The IT and electronics covered by this support span a broad range of systems with varying complexities. These systems include the legacy low speed data system known as Escort, the dynamic data systems known as Dewetron systems, the new low speed data system known as Collect, Observe, Broadcast, Record, and Analyze (COBRA), small systems based on Labview, Human Machine Interface (HMI)/Programmable Logic Control (PLC) systems, Ovation Control Systems, moving probe systems known as PACS, computer controlled signal conditioning systems, and media distribution systems.

The experimental facilities are categorized as either large, medium, or small. Their data systems, control systems, and instrumentation systems vary accordingly. Normally, the large facilities have priority over medium facilities; and medium facilities have priority over small facilities. The system availability and service response times are a critical component of this IT support. ~~and are outlined in Appendix I~~.

The Contractor shall provide support in accordance with Appendix M, Test Facility Support.

3.8.4. Engineering and Design Environment Systems Administration Support

The Contractor shall provide technical support for the administration, installation, integration, management of, and end-user support, to the Engineering, Research and GESS3 discipline staff performing Engineering, Operations, Project Management, and Research, for all specialty applications in support of the mission of the Directorate/Center/Agency. Support and integration may cover the following; client/server applications, client installation scripts, standalone client installs, engineering menus and user interfaces on the client desktop, coordination with other IT Service providers (ie networks, security, procurement, etc.), integration with desktop OS and IT Security requirements, and integration with other applications and tools as necessary to provide an integrated environment from which the Engineers, Researchers and Support staff are required to work to complete their missions.

The Contractor shall provide support in accordance with Appendix N, Engineering and Design Environment Systems Administration Support.

3.9. Customer Experience and Engagement

3.9.1. User Assistance Team Center

The Contractor shall operate a User Assistance Team (UAT) based on industry best practices (e.g., those established by the Service and Support Professional Association) that provides users access to information about and assistance with OCIO products and services. The Contractor shall serve as an entry point for specific OCIO issues and services (i.e., eRoom, SharePoint, Application development requests, Data Center services, assistance with service and catalog requests, issues with utilizing I3P services, etc.). UAT personnel shall stay apprised of the information that is provided through a recognized Help Desk/Technical Support Professional association and pursue ongoing professionally recognized customer support training and certification. UAT operations are intended to cover all aspects of OCIO products and services. In some instances, the Contractor will need to work with other GRC contracts that have centralized point of contact functions directly related to their specific contract deliverables. The Contractor shall ensure as part of UAT operations, procedures and practices are in place to

coordinate efforts with other service providers. The Contractor shall ensure as seamless an approach as possible to providing accurate, timely, and professional responses to customer request. The UAT shall provide accurate tracking, routing and reporting of the customer requests. The Contactor shall ensure a timely response and determine the most effective mechanism for future responses to similar requests.

The Contractor shall provide support in accordance with Appendix O, User Assistance Team.

3.9.2. Enhanced End-User Systems and Administration Support

The Contractor shall be responsible for several distinct operational activities of enhanced systems and administration support activities. These are typically IT support activities which are beyond the scope of I3P supported services, bridge the gaps between the ACES desktop environment and specialized application issues, and relate to specialized or unique organizational requirements. The Contractor shall ensure that all enhanced systems administrators (ESAs) have knowledge available to them to ensure they are capable of providing enhanced end-user systems and administration support.

The Contractor shall provide support in accordance with Appendix P, Enhanced End-User Systems and Administration Support.

The Contractor shall provide support personnel with the minimum qualifications in accordance with Appendix Q, Enhanced End-User Systems and Administration Support Qualifications.

3.9.3. Training Support for IT Systems and Environments

The Contractor shall assist the GRC organizations in the development of GRC specific curriculum and training for IT systems and environments. Systems and environments include but are not limited to Agency initiatives (e.g., performance plan system, smartcard logon). The delivery of the training could range from hands-on, multimedia, and/or on-line and will be determined in conjunction with the Government.

3.9.4. Consulting and Outreach

The Contractor shall provide a Customer Service Agent function to support designated GRC organizations, organizational IT Point-of-Contacts, and OCIO organizational liaisons. This activity requires an understanding of OCIO products and services, knowledge of IT concepts, principles, methods, and practices; requirements analysis principles and methods; commercial off the shelf (COTS) products and components used at GRC; cost-benefit analysis principles and methods; internet technologies; project management principles and methods; acquisition management policies and procedures, and IT security principles and methods.

Appendix A

(2.2.1) Work Management System Support

a) Be production ready and user friendly at the beginning of the performance period
b) Be fully functional on Mac and PC platforms that are configured to Agency interoperability standards. Be functional on multiple form factors (e.g., tablets, smartphone, etc.)
c) Be 508 compliant
d) Provide the capability to input and update documents.
e) Provide a method for core work areas and IDIQ task order estimates and approaches to be delivered to the NASA customers and estimates to be approved or rejected.
f) Provide a method for amending core work areas and IDIQ task orders.
g) Provide the capability to track applied funding (from multiple funding sources) and make available to the task monitors the costs and balances for core work areas and their associated sub-elements, and IDIQ task orders.
h) Provide a robust search capability that will support contract tracking and reporting (e.g. 533 reporting).
i) Provide the capability for electronic role-based approval authority, as well as access control and security.
j) Configure authentication into the environment utilizing NASA's Launchpad authentication mechanisms.
k) Configure authorization into the environment utilizing NASA's Access Management System mechanisms.
l) Provide the Government with a download of the data every month in a format that is in the best interest of the Government.
m) Be populated, with Government provided data in comma delimited format, with current and new core work areas and IDIQ task order data prior to full performance.
n) Be maintained to remain fully functional during and after upgrades.
o) Have scheduled maintenance to ensure uninterrupted full access to the Government on all data.
p) Provide a test environment identical to the production environment, which enables the Government to evaluate and provide comments on feature enhancements.
q) Have planned system upgrades and enhancements installed in the test environment, prior to implementation. The Government shall be given full access to the test environment and will approve upgrade and enhancement implementation in the production environment.
r) Require secure Launchpad authentication access for all users based on roles and responsibilities and approved by the COR.
s) Provide read-only access to Government representatives, as approved by the COR.
t) Archive data (active and closed).
u) Provide access of data on-site and off-site.
v) Differentiate between core work areas and IDIQ task orders.
w) Support attachments within requirement descriptions
x) Incorporate, access or attach forms (i.e. Informed Filler, PDF, Word)
y) Route to all users individually or simultaneously.
z) Provide routing History and Status of all requirements throughout the routing process
aa) Be able to send e-mails to Users
bb) Have an on-line training module available for the duration of the contract
cc) Develop and maintain on-line System Manual

dd) Provide the Government the ability to obtain or generate standard, ad hoc and customize reports
ee) Comply with Federal, Agency, and Center information security policies.
ff) Provide the COR with the capability to approve and cancel tasks for a TM (serve as an alternate/back-up for all TMs)

Appendix B

(2.8) Configuration Management

a) Equipment tag number
b) Service Description (i.e. intended purpose)
c) Hardware configuration including manufacturer name, model and serial number
d) Hardware location (e.g. Center, Building, Room, Grid, and Rack)
e) Machine name
f) Media Access Control (MAC) address
g) Network interface (e.g. jack number)
h) IP address
i) Operating System including name, version, patch level, license type
j) Commercial Off the Shelf (COTS) Software
k) Custom Software
l) Virtual machine configuration
m) End-user name, NASA organization code, and phone number
n) System Administrator name, NASA organization code, e-mail address, UUPIC, AUID, and phone number
o) Acquisition Cost
p) Acquisition Date
q) Projected hardware technology refresh date
r) Design documentation
s) Standard Operating Procedures
t) Warranty and Maintenance agreements
u) Drawings including title, official date, revision, software format, size, project ID
v) Be production ready and user friendly at the beginning of the performance period
w) Be fully functional on Mac and PC platforms that are configured to Agency interoperability standards
x) Be 508 compliant
y) Provide a robust search capability that will support software licenses management, security reporting…
z) Provide the Government with a complete data download in comma delimited format, upon request
aa) Be maintained to remain fully functional during and after upgrades.
bb) Have scheduled maintenance to ensure uninterrupted full access to the Government on all data.
cc) Provide read-only access to Government representatives, as approved by the COR.
dd) Archive data (active and closed).
ee) Provide the Government the ability to obtain or generate standard, ad hoc and customize reports
ff) CMDB reports shall provide data that is sortable by each task written under the contract
gg) Comply with Federal, Agency, and Center information security policies.

Appendix C

(3.2.5) Custom Applications Development Examples

Glenn Drawing Information System (GDIS) and Pressure Systems Database (PSD)

GDIS is a legacy, web-based accessible database which is used to track and search for drawings and drawing related items. GDIS has been active since 1992 and contains data from earlier drawing search tools, such as the Lewis Drawing Record System. GDIS is maintained by the Configuration Group. GDIS is linked to an Engineering document management software (EDMS), Adept, which helps locate, manage, share and control engineering and CAD documents throughout their lifecycle. GDIS is not capable of displaying native CAD files (i.e., dwg files). GDIS can display PDF files of the drawings and of stored Facility Change Requests.

PSD is a legacy, web-based accessible database used by the Pressure Systems Office (PSO) to track and search for components and pressure related items. PSO is tasked with data gathering, tagging, and entering into the PSD with the goal of managing risk of pressure vessels and pressurized systems (PVS). PSD is linked to the Computerized Maintenance Management System, IBM's Maximo. For new and existing systems that have been entered into PSD for standard Recertification and In-Service Inspections, scheduled PM tasks existing in PSD would be created in Maximo to generate PM work orders. Fields such as "Last Performed" dates and associated intervals (frequencies) entered in the PSD would allow PM tasks to be created in Maximo.

The Contractor shall support and enhance the Glenn Drawing Information System (GDIS) and Pressure Systems Database (PSD). Provide all necessary application and database support for the ongoing support and enhancement of GDIS and all related sub-systems.

Support requirements include:

a) Support and enhance the Glenn Drawing Information System (GDIS) and Pressure Systems Database (PSD). Provide all necessary application and database support for the ongoing support and enhancement of GDIS and all related sub-systems.
b) Analyze, design, develop and implement additional data requirements from the Pressure Systems Office.
c) Provide ongoing support and maintenance of the Plum Brook sub-system for GDIS.
d) Analyze, design, develop and implement additions to the existing applications to accommodate procedural improvements from the Configuration Group.
e) Develop PSD component reports.
f) Develop PSD ad-hoc reports as requested.
g) Modify on-line components based on on-going needs from the Pressure Systems Office.
h) Provide support for PSD data interface to other systems in use, e.g. IBM's Maximo Computerized Maintenance Management System; and GDIS data interface to other systems in use (e.g., Synergis Software's Adept engineering document management software).

i) Provide technical expertise to perform the requirements of the task. This expertise includes; but is not limited to, system administration, database administration, and experience working with and knowledge of other database systems, i.e. Maximo and Adept.

Computerized Maintenance Management System (CMMS)

The Contractor shall provide Information Technology support for all environments in the Computerized Maintenance Management System (CMMS), including but not limited to production, test, training, and development environments. This system currently consists of 6 physical servers and 3 VMs. A CMMS is mandated for all NASA facilities, per NPR 8831.2E. For GRC, this system is used to track and report on information that includes work orders, assets, and scheduled maintenance. Provide enhancements to the system when requested by the Government.

Organizations directly supported include Code F Testing Division, Facilities Division, and Plum Brook Station. Indirectly supported are all of Lewis Field and Plum Brook Station, to the extent that all GRC personnel have access to Maximo as potential work requesters.

Provide Information Technology support and enhancements for the Computerized Maintenance Management System (CMMS), and its test and development environments.

Support requirements include:

a) Provide IT support for IBM Maximo software, IBM Websphere Middleware, Oracle Database, VMware and Windows. This support includes, but is not limited to maintaining, patching, upgrading, database backup and recovery, problem diagnosis, documentation, create and maintain Oracle application schemas as required for GRC Maximo implementation for all database environments, and Websphere administration in clustered and non-clustered environments.
b) Provide support to maintain the current baseline functionality of the applications and configurations to include; but not limited to, all currently used modules, data, and related integrations, workflows, reporting, and security. Maximo is currently integrated with the Pressure Systems Database, TFOME “Real Time”, and LDAP.
c) Code F personnel will provide first tier user support and troubleshooting. Assistance shall be provided to the TM as requested for application end user support and Maximo issues analysis.
d) Provide IT security expertise to configure and maintain all environments to meet NASA/FISMA IT security requirements. Maintain and enhance IT Security Plan as required.
e) Provide technical expertise, develop and maintain procedures and guidelines for all environments as required.
f) Provide data storage, retrieval, and archival services that meet Government specified data retention requirements and return to service requirements for CMMS.
g) Provide hardware/software installation upgrades as needed.

h) Procure and track software and hardware and/or software and hardware maintenance agreements and/or licenses for all environments as necessary.
i) Provide BIRT (Business Intelligence and Reporting), QBR (Query Based Reports), and SSRS (Structured Query Language (SQL) Server Reporting Service) report generation capabilities, and develop BIRT reports for Maximo, as specified by the Government, to support the existing Maximo configuration.
j) Maintain Oracle views to support back-end Maximo table access for Microsoft Access querying.
k) Respond to emergency fixes (correction of a system malfunction that is preventing the customers from using critical functional requirements of the system) that affect Production applications. This element will have the highest priority with respect to the overall task.
l) Maintain and update SSL certificates.
m) Provide Information Technology development support to add functionality into GRC Maximo when requested by the Government and funding is available. Development may be estimated and paid for separately from the base task. Development may include the following items:

    i. Application configuration to utilize standard Maximo features/modules that are not presently being utilized now.
    ii. Changes to Maximo functionality for modules that are currently being utilized.
    iii. The development of new integrations with other software applications and/or changes to existing integrations.
    iv. Application Designer changes for modules that are presently being used.
    v. Report Development
    vi. Data loads and data cleanup

n) Gather and provide requirements definitions for new configuration changes or development. Document each new change in Maximo with the detailed requirements, impacts, and estimate and provide to the Government for approval and evaluation.
o) For any major changes to Maximo functionality outside of the standard “out of the box” usage, provide:

    - User documentation on how to use the new features created.
    - Technical/configuration documentation to the Government.

p) Provide technical advice to the Government on the suitability and impacts of external procurements that will directly affect Maximo.

Central Process Systems Operations (CPSO)

The Contractor shall provide Information Technology services to maintain, enhance, and develop application systems that support business processes associated with the Central Process Systems Operations Branch. The existing system is the Central Process Scheduling System (CPSS), which includes product scheduling, product and power tracking and reporting processes for the Central Process System.

Support requirements include:

a) Provide support and maintenance for the existing Central Process Scheduling System (CPSS), which includes product scheduling, product and power tracking and reporting processes. This system contains program components developed in both PowerBuilder and Cold Fusion.
b) Develop enhancements, and new components for the CPSS and develop and maintain other application systems as funding permits.
c) Maintain systems fully operational Monday through Friday with system enhancements implemented outside core hours.
d) Respond to emergency fixes both during and outside of core business hours (correction of a system malfunction that is preventing the customer from using the critical functional requirements of the system) that effect production applications and they shall receive the highest priority.
e) Ensure modifications to the existing applications will be thoroughly tested by the programmer and customer before being released into the production environment.
f) Provide periodic status and progress reports at intervals determined by the Customer.
g) Provide all system and user documentation, as well as training as needed.
h) If purchasing equipment, the Contractor shall follow the guidelines of MFR Recommendation 7 and MFR Recommendation 137.
i) Provide administrative backup as necessary to add users to the CPSS database.

Code FD Systems

The Contractor shall provide information technology support to the Code FD Facilities Systems. This consists of four FD servers, multiple VMs, and numerous applications and websites. Included is the Project Management Database (FPMD), Archibus, the FD Portal, FD Website, PSO Website, FINS, MP2, Revit, Specsintact.

Support requirements include:

a) Provide support and maintenance for the existing Code FD Systems, which includes product scheduling, product and power tracking and reporting processes. This system contains program components developed in both PowerBuilder and Cold Fusion.
b) Develop enhancements, and new components for the Code FD Systems and develop and maintain other application systems as funding permits.
c) Maintain systems fully operational Monday through Friday with system enhancements implemented outside core hours.
d) Respond to emergency fixes both during and outside of core business hours (correction of a system malfunction that is preventing the customer from using the critical functional requirements of the system) that effect production applications and they shall receive the highest priority.
e) Ensure modifications to the existing applications will be thoroughly tested by the programmer and customer before being released into the production environment.
f) Provide periodic status and progress reports at intervals determined by the Customer.
g) Provide all system and user documentation, as well as training as needed.
h) If purchasing equipment, the Contractor shall follow the guidelines of MFR Recommendation 7 and MFR Recommendation 137.

i) Provide administrative backup as necessary to add users to the Code FD Systems.

Reliability Centered Maintenance (RCM) based Asset Management and Maintenance Program

Provide the IT services to keep RCM software updated and viable. Provide maintenance procedures that are defined by the FT/FD/TFOME staff for the Asset Management and Maintenance Program (AMMP) database. Provide RCM training.

Appendix D

(3.2.7) Scientific Applications and Services Support

a) Develop tools and applications including desktop, server, web and mobile applications that provide high-impact data visualization including movies, 3D, and time-accurate data representation.
b) Develop tools, techniques and facilities to facilitate and enhance lab-wide use of scientific visualization software.
c) Visualize very large datasets using parallel processing techniques.
d) Give presentations on scientific visualization.
e) Work with visualization tools vendors to schedule demonstrations and training.
f) Develop techniques to apply virtual reality technology to scientific visualization, collaborative engineering, and mission simulation. . Visualize in virtual reality the capabilities and geometry of proposed hardware
g) Develop interactive system simulations. Model complex systems and mission scenarios using state-of-the-art computer graphics technology.
h) Develop high-level accurate system representations and functions using rapid prototyping tools.
i) Develop virtual CAD-based design models.
j) Consult on using existing commercial and open source software and hardware for performing big data analysis.
k) Design, develop, maintain, optimize and deploy custom applications that analyze large scientific datasets.
l) Integrate big data software solutions with hardware storage and computing solutions
m) Provide Scientific and Engineering Code Development and Optimization.
    a. Provide consultation on best practices for the development of scientific codes.
    b. Modify existing codes to improve efficiency by making codes run faster and/or use fewer resources.
n) Maintain and enhance walk-in facility for state-of-the-art scientific visualization and virtual reality applications.
o) Establish and maintain archive of facility productions.
p) Provide content for graphics lab Web site.
q) Coordinate and manage GRC's participation in special customer outreach events that involve visualizations of GRC projects.
r) Coordinate design and construction of demonstrations and exhibits. Develop or re-use existing visualizations and simulations for the event.
s) Oversee logistical requirements for off-site events including equipment transportation, and event promotion.
t) Promote and market technical programmatic missions and milestones.
u) Support outreach activities which include web services, video conferencing, e-business, and simulation labs.
v) Develop and conduct demonstrations of facility capabilities in support of program advocacy, education and public awareness missions

Appendix E

(3.3.1) Datacenter Management

a) Staff availability
    i. On-site support shall be available during normal business hours
    ii. On-call support shall be 24x7.
b) Systems shall integrate with GRC and NASA internal and external services networks, including firewall and VPN with exceptions agreed upon with NASA GRC Technical Monitor.
c) Systems shall support and implement evolving Agency infrastructure elements, when appropriate, including but not limited to, NCAD, Launchpad, and SmartCard
d) Systems shall meet all security requirements in coordination with the GRC IT Security Office and GRC Center Information Security Officer (CISO) and Authorizing Official (AO) acceptance of residual risks.
    i. Implement the appropriate security controls, as determined by NIST, required to maintain authority to operate systems
    ii. Implement all NASA IT security policies required to meet system security plan
e) Systems shall implement all security related system patches as required by GRC and NASA
f) Production System changes shall be implemented in accordance with NASA GRC configuration management requirements
g) System maintenance shall be performed, whenever possible, within NASA GRC approved maintenance windows
h) Major system changes, upgrades, service enhancements, etc. are agreed to by and prioritized in conjunction with the NASA GRC Technical Monitor

Software Support

a) Major releases of vendor supported software shall be implemented within agreed upon schedule with the GRC Technical Monitor.
    i. Virtual machine software
    ii. Operating system and operating system related software
    iii. Database software
    iv. Web Server software
    v. Applications level software
b) For specialty applications coordination with user community shall be necessary to verify upgrades and changes will not disrupt project work or cause unplanned results (scripting, customizations, workflows, data duplication) could be lost if not accounted for before upgrades. Testing shall be necessary.
c) Software releases that provide required bug fixes shall be implemented within agreed upon schedule with the GRC Technical Monitor.
d) Software purchases and licensing shall be coordinated with NASA GRC Technical Monitor.
e) Provide input, recommendations, and documentation in support of software refresh schedules.

Security plan development and support

a) Attend security plan meetings
b) Maintain hosting environment security plan and supporting documentation
Support security audit, review, and mitigation activities

Appendix F
(3.3.4) IDAMS Support

a) Provide support to install and configure IDAMS hardware
    i. One application Server
    ii. One database server
    iii. Three probe servers
b) Provide Windows Server administration services in support of the IDAMS software environment.
    i. Preventative maintenance
    ii. Problem diagnosis
    iii. Hardware repairs
    iv. Software bug fixes, upgrades, and configuration
    v. Backup and recovery
c) Provide MS SQL Server Administration in support of IDAMS software environment
    i. Preventative maintenance
    ii. Problem diagnosis
    iii. Hardware repairs
    iv. Software bug fixes, upgrades, and configuration
    v. Backup and recovery
d) Provide support of the HP UCMDB and DDM COTS software; including maintenance upgrades and patches, configuration, backup and recovery, and problem diagnosis.
e) Provide configuration support of the HP UCMDB and DDM COTS software according to Agency requirements.
f) Perform hardware and software installation of IDAMS Remote Probes, based on NASA GRC firewall locations and Agency requirements.
g) Provide configuration support of the HP UCMDB Remote Probes.

Appendix G
(3.3.5) Server Administration

a) Installing and configuring servers;
b) Maintaining latest NASA-approved software/firmware patches on systems to remain current with vendor recommended compliance;
c) Updating Operating System (as necessary) to remain fully compliant with vendor supported software as well as maintain application functionality.
d) Managing a Hypervisor-based virtualization infrastructure;
e) Configuring secure systems based on current NASA security requirements;
f) Setting up the server file directory structure;
g) File and share access provisioning;
h) Creating and maintaining user accounts (Domain and Local);
i) Configuring servers to support data transmission among systems;
j) Monitoring and tuning servers for optimal performance;
k) Maintaining and reviewing logs;
l) Monitoring, creating, and deleting network printer queues;
m) Backup and restoring files/databases;
n) Scanning for viruses;
o) Identifying and resolving problems;
p) Documenting and maintaining server configuration management, such as operating system changes;
q) Completing and documenting root-cause analysis to determine cause of an unscheduled outage within seven working days of outage;
r) Complying with all NASA IT Security policies (NPR 2810.1, FIPS PUB199, Standards for Security Categorization of Federal Information and Information Systems);
s) Implementing all appropriate NASA IT Security procedures (NPR 2810.1, FIPS-199).

Appendix H

(3.3.7) High Performance Computing

a) Maintain a state-of-the-art high performance computing facility.
b) Perform specialized system maintenance duties in the High Performance Computing (HPC) and graphics environments to assist the Center's programs in meeting their objectives and milestones
c) Perform backups, user account support, monitor system utilization and ensure that all the systems software and applications are functioning properly. Perform the installation, testing, and maintenance of platform specific software. Provide these services for operating systems, compilers, parallel software tools, and software tools designed for the specific purpose of system integration
d) Monitor systems for optimal performance. Tune systems accordingly to achieve necessary gains in processor utilization and disk and network I/O.
e) Provide the installation, testing, user support, and maintenance on all the HPC and graphics systems of job scheduling and computational grid tools as well as parallel applications and tools.
f) Provide high-end network connectivity that will generate the I/O throughput that is required for parallel and large code development on HPC and graphics systems. Emphasis on throughput shall be placed on the testbed networks. Consideration to improved networked capabilities shall be given to the production systems once the network technology has been proven. Testing of the latest networking capabilities shall be limited to the testbed systems
g) Maintain a common home directory layout, appropriate network interface configuration, and NFS (Network File System) configuration and maintenance
h) Provide user support in parallel code compiling and parallel application runtime support across all systems in the HPC and graphics environment
i) Resolve user problems and questions regarding the production systems, testbed systems, and job scheduling and computational grid tools. Address inquiries and additional requests for specialized reports regarding the accounting and metrics configurations on the production and testbed systems, as well as the appropriate clustered computing environments located across the lab.
j) Address generally defined HPC and graphics problems or functional requirements by developing alternative technically acceptable solutions, indicating potential policy and/or operational issues, preparing implementation plans, and preparing status/procedural reports on the work in progress on the defined task
k) Maintain an internal Web based information site for the high performance testbed systems, production systems, and graphics systems. Include information on account reports, system configuration, user documentation, supported software, networking configuration, computational grid user guides and examples, and supported parallel tools including appropriate user guides and examples.
l) Provide user and administrative documentation for the production and testbed systems in the HPC and graphics environments. Document all procedures involved with the installation, testing, and deployment of hardware and software upgrades, hardware installation, accounting configuration, networking configuration, and parallel environment support for the production, testbed, and graphics systems.
m) Provide system administration support, optimize system configuration, and provide end user support to porting Unix/Linux based computer codes to the Windows environment.

n) Provide user support in parallel code compiling and parallel application runtime support across all systems in the HPC environment
o) Resolve user problems and questions regarding the production systems, testbed systems, job scheduling and computational grid tools. Address inquiries and additional requests for specialized reports regarding the accounting and metrics
p) The Contractor shall provide investigative support and support the planning, implementation, integration, and migration to high-performance computing utilizing Cloud technologies when appropriate

Appendix I

(3.3.8) Database Administration

a) Installing new software such as new versions of the database management system (DMBS) software, application software, and other software related to DBMS administration;
b) Working with the server administrator and storage administrator to properly configure the hardware and software;
c) Monitoring and administering DBMS security which includes adding and removing users and groups, administering quotas, auditing, managing security settings, and checking for security problems;
d) Analyzing data stored in the database and making recommendations related to database performance and efficiency;
e) Participating in the preliminary design of a database by pointing out potential problems;
f) Modeling data for the purpose of system optimization;
g) Administering existing databases;
h) Analyzing, designing, and creating new databases;
i) Support of the development, implementation, and maintenance of Hyperion applications, including Hyperion querying and reporting software;
j) Provide planning, documentation, and overall support for development, test, and production environments.
k) Provide connectivity support, upgrades, customer operational support, problem diagnosis and resolution, preventive maintenance, system and data backups, server hardware administration, specialized printer support, security administration, hardware and software upgrade research and implementation, and documentation maintenance;
l) Provide database development and maintenance services in support of the development, implementation, and maintenance of client/server, Web and Hyperion applications, including, but not limited to, data modeling support, database schema development and maintenance, performance monitoring and tuning, security administration, and problem diagnosis and resolution;
m) Create and maintain application instances across multiple environments;
n) Develop, modify, troubleshoot and maintain database schemas in all environments. Provide database schema support for Oracle, MySQL, and SQL server platforms. Provide data modeling services. Provide database access control, performance monitoring and tuning, and security administration where required
o) Support the integration of database environments with applications (i.e., Aperture, ColdFusion, SpecsIntact, etc.)

Appendix J

(3.6.1) Video Conferencing and Collaboration Facility Support

a) Provide Audio/visual/IT support for Conference Rooms.
b) Provide full-time staff during core hours to schedule GRC videoconference and collaboration facilities.
c) Provide a common, easy-to-use, efficient method for GRC customers to schedule videoconferences or collaboration sessions.
d) Maintain a web-based calendar (e.g. WebEvent) that gives GRC users the ability to view room availability or confirm scheduled conferences.
e) Coordinate the scheduling of conferences with participants from NASA and NASA partners and with the NASA videoconference system.
f) Provide a reminder to customers at least two days prior to their conference.
g) Schedule conferences via the NASA on-line scheduling system to reserve time slots and network bandwidth with the NASA contracted communications carrier.
h) Perform conference set-up at videoconference rooms. This includes connecting the room to the conference prior to actual conference start time, insuring that all equipment is functioning properly and taking action to repair problems or coordinate problem resolution. After the conference is complete, ensure that the room is disconnected from the conference.
i) Provide on-site operations staff during conferences at the primary GRC videoconference facility in Administration Building. Provide desk-side support to GRC Senior management who frequently use this facility.
j) Provide a method for on-call support for facility customers to contact task staff to request assistance during a videoconference.
k) Provide staff to perform or coordinate troubleshooting and problem resolution during videoconferences at facilities other than the Administration Building.
l) Support agreements as established by the Government to share use of videoconference facilities.
m) Conduct periodic maintenance on videoconference equipment not covered by other maintenance contracts. Provide a current/historical status of maintenance actions to the Government upon request.
n) Compile and submit monthly reports to the government showing the utilization of each room and the customers for all rooms. Compile and submit weekly highlights as needed to bring specific concerns or issues to the attention of the task monitor.

Appendix K

(3.7.2) IT Security Management and Operations

a) Operate, administer, and maintain the GRC network security environment, ensuring continuous operation coverage. This environment includes but is not limited to vulnerability scanning tools, log management, and forensics tools.
b) Manage user accounts, reviewing audit logs, keeping detailed records concerning hardware and software upgrades, performing routine backups of systems databases, installation of upgraded hardware, software, and firmware.
c) Immediately notify the appropriate designated official in the event of a disaster or other contingency that disrupts normal operations.
d) Report planned technical changes to systems to the CISO before such changes are implemented.
e) Work with NASA to meet changing requirements. Propose and test enhancements to NASA's network security environment and implement these enhancements when and approved by the Government.
f) Work with Organizational Computer Security Officials (OCSOs) to improve the overall security knowledge and posture of NASA GRC through layered defense strategies applied to systems within the GRC Network Perimeter.
g) As directed by the Government under special circumstances, work with GRC customers to provide risk-mitigated solutions that meet their requirements while maintaining the security posture of GRC.
h) Monitor the ESD and GRC specified Helpdesk related security queue and disposition trouble tickets assigned to that queue. Provide ACES Remedy Queue support for users interacting with systems managed by the IT Security Office.
i) Provide preliminary IT security checks related to standard configurations, system security plans, personally identifiable information (PII), controlled unclassified information (CUI), and Initial Privacy Threshold Assessment (IPTA).
j) Identify equipment/software/services necessary for NASA GRC, and with appropriate Government approval, obtain quotes from vendors, procure, and deliver necessary products to NASA GRC.
k) Respond to data calls and review policies from the Agency, other Government organizations, and civilian authorities
l) Notify the CISO at least one (1) month prior to connecting systems, applications, and related infrastructure
m) Annual reviews of contingency plans
n) Continuously monitor systems following all NASA standards and requirements as documented in NPD 2810.1D, or subsequent revisions

Appendix L

(3.7.7) Information Technology Security Awareness and Training

a) Develop and implement Agency and GRC IT security awareness training as directed by the Government. This includes computer-based, classroom, virtual classroom, and individualized instruction.
b) Prepare and deliver briefings at the request of the Government
c) Maintain an understanding of learning and training concepts necessary for the development of IT security courses and the delivery of quality awareness products (e.g., newsletters, calendars, web sites) to support a wide range of topics related to IT security
d) Research and share the latest techniques, advances in courses, and awareness activities and serve as an administrator to the NASA learning management system (SATERN)
e) Assist the Government in staying in constant communication with the NASA Centers to determine needs as they relate to IT security awareness and training
f) Participate in outreach activities as requested by the Government
g) Assist with the collection, analysis, and accurate reporting of awareness and training metrics for the Agency and each NASA Center. Statistics shall be provided to determine the effectiveness of the activities and products delivered from the ITSATC.
h) Continuously track the completion of IT security training across the Agency and report to the Government.
i) Prepare and report metrics as requested by the Government
j) Provide assistance with FISMA reporting
k) Respond to data calls and review policies from the Agency, other Government organizations, and civilian authorities.
l) Participate in the coordination of the ITSATC and Agency Information Technology Security Division (ITSD) marketing programs
m) Support the development, review, modification, and implementation of IT Security training policies and governance.

Appendix M
(3.8.3) Test Facility Support

a) Procure and track software and hardware and/or software and hardware maintenance agreements and/or licenses for a variety of equipment as required.
b) Provide technical expertise to perform the requirements of the task. This expertise includes; but is not limited to, electronics/electrical equipment (including IT equipment), system administration, networking, IT security, and logistics.
c) Maintain and develop procedures and guidelines for supported systems.
d) Provide transportation services for task personnel and equipment to/from work sites. Make use of existing Government equipment transportation services whenever possible, but not cause impact to the performance of the task.
e) Perform hardware/software installation including new systems, removal/cleanup, disposition, preventative, predictive, and remedial maintenance, and coordination of calibration by the GRC Calibration Lab and, where applicable, Insitu by the Contractor in accordance with NASA Policy Directive 8730.1 (as revised) for fifty (50) plus experimental test facilities with dedicated, standardized IT systems.
f) Provide operational support, backup, recovery, and custom software maintenance for fifty (50) plus experimental test facilities each with dedicated, standardized IT systems.
g) Provide hardware and software configuration management and periodic (not less than twice per year) status reports including; but not limited to, engineering revision maintenance, logistics (includes, but is not limited to, up-to-date equipment tracking, coordination of equipment procurement/delivery, organized and documented hardware/software storage, facility specific hardware configurations, facility specific software configuration, facility specific data storage capacity), life cycle planning and tracking, assessment and maintenance of spares, proactive obsolescence planning, and warranty monitoring.
h) Perform verifications of system operation to vendor/Government specifications, custom system administration, and specialized hardware and software application development for fifty (50) plus experimental test facilities each with dedicated, standardized IT systems
i) Provide on-site operations and maintenance support during facilities' run schedules, typically from the hours of 0700 to 2400, Monday through Friday. Third shift and weekend (Saturday and/or Sunday) support will be required for those facilities scheduled to run during these times. Government programs may require additional service coverage. This service will be at an additional cost to the Government.
j) Coordinates task activities with Government task management, facility point of contact, and other professional/technical groups/organizations as required. Other professional/technical groups/organizations include but are not limited to, the following: systems development staff, application programming staff, network operations, and other contracts not covered specifically in this task order area.
k) Maintains and enhances existing Security Plan for Information Technology covered under this task.
l) Provide Information Technology security expertise to properly configure and maintain the varying security requirements (FISMA – Low, Moderate, and High Impact Levels, and Classified) for the fifty (50) plus experimental test facilities each with dedicated, standardized IT systems.
m) Provide procurement services for hardware and software to support the maintenance and augmentation for the fifty (50) plus experimental test facilities each with dedicated,

standardized IT systems. Services to include, but are not limited to, developing specifications, researching applicable vendors, placing orders, proactively tracking order status and expediting, resolving ordering issues/problems, receiving and verifying orders, completing government forms/documents in a manner to meet requirements, obtaining calibration of equipment to verify operation, and placing new equipment into tracking system.

n) Provide services for external repair of supported equipment (includes spares) to support the return to service of the fifty (50) plus experimental test facilities each with dedicated, standardized IT systems. Services to include, but are not limited to, timely diagnosis of equipment error/fault, researching applicable vendors, placing repair orders, proactively tracking repair status and expediting, resolving repair issues/problems, obtaining calibration of equipment to verify operation, testing equipment to verify operation, assure cost effectiveness, and documenting repair.
o) Provide implementation plans to the Government for approval.
p) Provide weekly operational and project status reports to the Government
q) Provide monthly task management reports to the Government which will include all labor and material costs that are identified to specific government-specified elements of work and/or projects.
r) Provide modification, replacement, and upgrade proposals for hardware and/or software. Proposals will include; but not limited to, purpose, supporting data, impact, costs, and schedules
s) Provide and support a method for facilities to request services performed under this task which includes; but not limited to, remedial maintenance, additions, removals, and modifications to the facility systems. Method requires response to the requestor within the negotiated time frame. Provide and support a method for operational/running facilities to obtain services necessary for the return to service of their systems covered under this task. An on-site response is required in 30 minutes (or less) for Lewis Field and 90 minutes (or less) for Plum Brook Station during coverage hours.
t) Provide critical vendor relationship management and procurement of hardware and software to support the systems in the experimental facilities, development environments, and reference/support areas.

Appendix N

(3.8.4) Engineering and Design Environment Systems Administration Support

The duties detailed under this Appendix are broken down into four main areas which are required to deliver highly specialized Engineering, Research, Operations, and Project Management applications to the Engineering and Research disciplines. The intent of these elements is to provide for a fully integrated environment which supports these specialized applications and labs.

1. The Contractor shall provide support for specialized applications which would include, but is not limited to, installation, integration, management, provisioning, and User support. This would include the following:
   a) Provide a license management system and maintain processes for tracking user requests, WBS/project requirements and funding, required approvals, annual renewal capability, usage reporting, and ad-hoc usage reporting used for capacity planning.
   b) Provide application packaging, install scripts, and Engineering menus required to provide user access to these specialized applications.
   c) Perform application scheduling and installs for new, renewed, and upgraded application on Server, Client/Server, and stand-alone Engineering and Research systems, both ACES and non-ACES systems. This requires local admin privileges to systems under these disciplines being provided to task personnel.
   d) Provide life-cycle testing and maintenance for these specialized applications which would include establishing development, staging and production environments and supporting user testing of the application before they are moved into the production environment.
   e) Perform integration testing and support of ACES (and future Agency) desktop builds to determine issues and impacts prior to the updates being deployed to the user community. These require access to Gold build alpha and beta testing environments and copies of the software for the purpose of testing.
   f) Create and maintain a software vendor database and required funding levels for applications by project.
   g) Create and maintain website information, training links, and access interfaces needed for each of the Engineering Application being supported.
   h) Prepare a summary of maintenance/upgrades performed on applications during the previous month and those planned for the next 2 months. It is anticipated that all software maintenances/upgrades will be installed within 30 days of receipt and all new software applications will be installed within 60 days.
   i) Provide an "able to Print" level of support for Engineering Applications, with a higher level of User support for PTC and MSC products.
   j) Problems to be addressed such that return to service is within 8 work hours. The Contractor shall perform these tasks during core hours. In emergency situation or to eliminate potential disruptions during core hours, the Contractor shall be required to work during off-hours, weekends and holidays. Examples of such instances are system maintenance; data uploads, system testing, and repairs.
   k) Provide coordination support working with a Vendor(s) to determine, when required, an implementation plan to bring on-site additional specialized Engineering Applications support personnel to assist the task with the

installation, upgrading, and migration of our current Engineering Applications. This would also include assistance in the migration of required data.

l) Maintains database architecture and management designs for back-end databases (ie. MYSQL and Oracle), for Engineering Applications, License Management, and Web presence.
m) Maintain FlexNet Manager (or future environment) for providing access to, monitoring, and reporting of Engineering Application licenses to GRC and in support of Agency licensing data calls and license management activities.
n) Create PRODUCTS and PROJECTS for GRC Windchill, DOORS, and other application involving database activity such as HyperSizer, Cradle, Genoa, and Subversion.
o) Support license consolidation activities at GRC or within the Agency.
p) Support IT Security requirements for applications.

2. Engineering and Research environment and Lab support
   a) Perform System administration and User support for computing systems in specialized Engineering and Research environments and labs
   b) The Contractor shall provide support in locations where required. The focus in these areas is more directly related to organizational, mission, and programmatic work and specific and unique environments rather than it is support for center operations.
   c) The Contractor shall perform system backups and recovery
   d) Perform Software and Hardware installations, integration, and support
   e) Support IT Security planning and perform required control maintenance, accreditation, continuous monitoring, and reporting per Agency IT Security guidelines
   f) Support integration of environments into the GRC infrastructure by working with other GRC groups (ie. I3P, facilities, Space Management, etc)
   g) Support User interfaces to Lab operations required by the Lab Managers (web content, calendaring, scheduling, etc.) as required by the individual lab
   h) Supports Lab infrastructure upgrades, integrations, and when required assists in the standing up of new environments/labs
   i) Supports procurements of new and upgrades to lab IT by researching, recommending, specifying and aiding in the procurement of the required components

3. Engineering and Research specialized application training
    a) Provide end-user support for specified engineering applications (currently the PTC products) used within GRC Engineering which include, but are not limited to, ProENGINEER, Windchill, MathCad, Mechanica, and ProductView.
    b) Develop and provide training seminars which are intended to enhance the one-on-one user support provide and aid users in the implementation of best practices when using the PTC products. The training and support materials shall be developed by the Contractor and then reviewed by the Government for approval and funding consideration prior to holding any training sessions. Once finalized the materials will be considered property of the Government and may be used by the Government for other training activities or in any other way deemed appropriate by the Government.
    c) The Contractor shall provide support for application vendor demonstrations, "lunch-time" training sessions, and focus group request specialized awareness sessions for new and emerging features and technologies.
    d) The Contractor shall develop and maintain documentation for application configurations, customizations, FAQs, Best Practices, and User guidelines for the applications covered under this task.
    e) The Contractor shall support and manage the provisioning of Agency or Center owned and provided training licenses for PTC's Creo, Windchill and other Engineering applications.
    f) The Contractor shall provide a system for gathering specialized application training requests, determining training needs based upon support issues and can report on training metrics established for those applications.

4. Consultation and other Support Services required for support of an Engineering and Research Environment
    a) Participate with Engineering, Research and Center and Agency teams (ie ETADS) in determining requirements for Engineering and Scientific workstations, applications, networking, and other computing services.
    b) Provide technical review and recommendation for high-end workstations and specialized systems being procured through ACES.
    c) Provide end-user support for non-ACES devices required by Engineering and Research to meet mission requirements (e.g., large format plotters and printer, specialized data collection devices, control systems, etc.)
    d) Develop and provide a mechanism and plan to update Users regarding changes within the Engineering and Research IT environment. This would include, but is not limited to: New SW applications and updates, patches, IT Security issues, application maintenance cycles, resolution of license conflicts, and training seminars.
    e) The Contractor shall provide support for the IT Security planning activities.
    f) The Contractor shall support the gathering of specs and procurement information required for IT purchases, review specs provided by Engineers, Researchers, and Lab Managers.
    g) The Contractor shall support the Engineering IT Resources Manager in the development of technology plans, IT data calls, and budget formation, phasing, and execution.
    h) The Contractor shall support the collection and maintenance of a database for tracking non-ACES IT devices.

i) The Contractor shall maintain a Help Desk to support Users and provide the processes and tools required to track and report user problem tickets and provide metrics which can be reviewed to provide for continuous improvement of the environment.
j) The Contractor will provide a mechanism for gathering, tracking, and reporting on User requested specialized Engineering and Research projects which are provided by I3P.
k) The Contractor shall support and maintain an engineering IT architecture associated with engineering applications. Support of the engineering architecture associated with engineering applications. Support of the resource domain-engineering infrastructure includes maintaining file/print/plotting services, SMS/SQL services, backup services, intranet web services required for access to applications, UNIX/LINUX and MAC connectivity, shared/public drives, HP blade and storage technology and maintenance vendor support, and project shares.
l) Recommend hardware and/or software upgrades to the engineering architecture and environment. Recommend changes in configuration to optimize performance and utilization of environment resources.
m) Provide diagnostics/trouble-shooting and minor maintenance of hardware
n) Engineering Data Manager Support
    a. Install, configure, and maintain Engineering Data Manager software on test, development, and production servers.
    b. Install, configure, and maintain Engineering Data Manager companion products including viewers, and MCAD integrations.
    c. Develop, install, and maintain custom code and user interfaces to provide ED-required customizations
    d. Obtain training and services require to effect items a-c as approved.

o) Assist the Agency's Consolidated End-User Services Contract providers to work problems that may arise within the Agency's Consolidated End-User Services Contract desktop environment when it effects engineering applications or related work
p) Engineering Help Desk / Problem Tracking
q) Technical support including research, coordination, tracking and documentation for the purpose of planning, facilitating and enhancing all ED engineering related operations. (e.g., equipment database, newsletter/FAQ pages, software usage, committee support, system administrator backup, technology and product review/enhancement, seminars, demonstrations, user training/instruction, various organizational meeting support, stock/purchase requests, computer supply distribution, H/W and S/W upgrades and the development of computer related procedures and policies).
r) Maintain required Engineering and Research content, processes, procedures, interfaces, and forms needed to represent Engineering and Research requirements within the Web environment.
s) Maintain knowledge-base of current, changing, a new security regulations and requirements of the Agency, Center, and Directorate.

Appendix O

(3.9.1) User Assistance Team

a) Answer all calls into the UAT Support Line, during the hours specified by the task, ensuring where possible that the caller does not have to leave a voicemail. The Contractor shall implement a call logging capability. The Contractor shall respond to voicemail within two business hours and to e-mail within four business hours.
b) Sort, log, or respond to email received in the Customer Support mailbox. Email messages requiring a response shall be answered within four business hours.
c) Ensure that all customer requests, where appropriate, are routed to the appropriate solution provider, logged, tracked and completed in a help desk tool. This includes logging of requests and a focus on ensuring that solutions are recorded as part of the closure process of open items. The Contractor shall ensure that processes facilitate easy analysis of the current workload (frequency and type of service). The Contractor shall ensure that information processed can be used as a knowledge base designed to capture workload metrics as well as information that is useful to Government personnel, management, and the GRC community at large (e.g., knowledge base of standard processes, issue patterns, lessons learned to future support, etc.).
d) The Contractor shall support the development and submission of Knowledge Articles, and their integration with the Enterprise Service Desk (ESD).
e) Provide assistance to users for the submission and processing of service requests. This support includes working with the OCIO organizational liaisons on submitting requests, tracking, providing status reports to the Government and customer. When contacted by the user, the Contractor shall provide support to users who experience rejected SRs, and assist users in correcting SRs in a timely manner.
f) Support product testing and user education on OCIO-provided products and services. The Contractor shall participate in various testing scenarios and in special teams to assess the capability or impacts of new or changing products and services.
g) The Contractor shall maintain a record of feedback and comments from customers.
h) The UAT will provide general support assistance to Glenn ESD Subject Matter Expert (SME) in the area of incident tracking, investigation, and workflow refinement and other I3P service and support duties as assigned.
i) Serve as the 1st level escalation of inquiries and issues that come to the User Assistance Team from the ESD, customers, or internal OCIO teams
j) Address problems/issues that are complex, unique, and/or involve multiple I3P service areas or services outside of I3P
k) Perform research as needed to assist the ACES SME in answering technical questions related to ACES services and delivery of those services to customers
l) Provide assistance as needed in responding to actions from GRC Center and OCIO management and Agency I3P Service Offices
m) Analyze data and produce reports as required
n) Provide administration of the I3P SharePoint site

Appendix P

(3.9.2) Enhanced End-User Systems and Administration Support

a) The Contractor shall provide one-on-one customer service for specified senior managers and their staff (for example, in-person workstation configuration and assistance) that fall outside the responsibility of the standard service provider.
b) The Contractor shall provide a software distribution capability for specific software products and distribution methods.
c) The Contractor shall provide support in locations where required. The focus in these areas is more directly related to organizational, mission, and programmatic work and specific and unique environments than it is support for center operations.
d) The Contractor shall provide specialized support for the operation of the local OCIO UAT and user consultations for Center and ESD support and troubleshooting processes.
e) The Contractor shall provide support as a front-line interface to users, accepting trouble reports and dispatching them as directed.
f) The Contractor shall provision, manage and maintain User accounts and groups.
g) The Contractor shall provision, manage and maintain Operating System settings and upgrades.
h) The Contractor shall install and configure local software as needed by the science, engineering, research, and institutional environments and its users.
i) The Contractor shall debug/diagnose system problems with software, hardware and coordinate disposition, repair and resolution as appropriate.
j) The Contractor shall evaluate and/or recommend purchases; has influence on purchasing process under Government supervision.
k) The Contractor shall participate in testing and recommending various hardware and software technologies that will improve performance and reliability.
l) The Contractor shall evaluate and install new software releases, system upgrades, patches, and resolve software-related problems.
m) The Contractor shall ensure user profiles are working optimally.
n) The Contractor shall customized support Enterprise Messaging systems, such as Microsoft Office Communicator 2007, Windows Live Mail, etc.
o) The Contractor shall support the network team to analyze and resolve LAN issues
p) The Contractor shall support telecommuters with laptop configuration and user assistance
q) The Contractor shall support the deployments of Windows, MAC, UNIX, and Linux operating systems
r) The Contractor shall support the network team to complete user moves
s) The Contractor shall troubleshoot/install/upgrade hardware (i.e., HD's, RAM, NIC, Video)
t) The Contractor shall configure Microsoft Office clients
u) The Contractor shall provide customized training and support to users on Microsoft Office products
v) The Contractor shall install local printers, workgroup printers, and setup local group sharing.
w) The Contractor shall perform system backups and recovery
x) The Contractor shall conduct and coordinate the research of user requirements in order to recommend new hardware and software standards
y) The Contractor shall resolve System Failures (Hard Disk Crash, Blue Screen)
z) The Contractor shall plan for Server Upgrades and System Expansion
aa) The Contractor shall spec and assist in the ordering of new hardware

bb) The Contractor shall assist with Summer Intern system setup, connectivity, login, and user education conducted by area and for division assigned personnel
cc) The Contractor shall assist in arranging temporary desktop and network services to specified locations in support of specials events
dd) The Contractor shall provide specialized systems administration which may require scripting and administration tools development

Appendix Q

(3.9.2) Enhanced End-User Systems and Administration Support Qualifications

a) Strong interpersonal and communication skills; capable of writing purchase justifications, training users in complex topics, making presentations to an internal audience, acting as a vendor liaison and interacting positively with employees.
b) Ability to solve problems quickly and automate processes.
c) A solid understanding of an operating system (Mac, UNIX, and Windows based); understands paging and swapping, inter-process communications, devices and what device drivers do, filesystem concepts (inode, clustering, logical partitions), can use performance analysis to tune systems.
d) High skill with most operating system commands/utilities.
e) Fundamental understanding of an operating system; for example, understands job control, soft and hard links or shortcuts, distinctions between the kernel and the user environment.
f) Familiar with an operating system and its commands/utilities at a user level; can edit files, issue commands, find users' home directories, navigate through the file system, and use I/O redirection.
g) Familiarity with most basic system administration tools and processes; for example, can boot/shut down a machine, add and remove user accounts, use backup programs and fsck or chkdsk, maintain system database files (groups, hosts, aliases, usermanager, debug registry).
h) Understanding of networking/distributed computing environment concepts; understands principles of routing, client/server programming, the design of consistent network-wide filesystem layouts.
i) Familiarity with fundamental networking/distributed computing environment concepts; can configure NFS, Window domain clients; can use nslookup or dig to check information in the DNS; understands basic routing concepts.
j) Understanding of and experience with the installation, configuration and debugging of various hardware peripherals such as external storage arrays (ex. RAID configurations and Logical Volume Management).
k) Ability to program in an administrative language (Tk, Perl, VBScript, a shell), to port C/shell programs from one platform to another.
l) Minimum of five years of previous system administration experience with similar mixed OS, non-uniform environments.
m) Previous experience in customer support, computer operations, system administration, or another related area.
n) Use NetIQ Directory and Resource Administrator for Domain Administration – reset domain passwords, deleting/creating computer accounts, add A/D group to computer accounts.
o) Computer Science Degree or related fields.
p) Maintain NASA Specific IT certifications and the ability to maintain system-level security requirements for the ACES systems.
q) Previous experience in unique engineering and analytical environments.
r) Strong working knowledge of Windows server and Active Directory design and implementation.
s) Understanding of networking concepts; patch cable on the network switch.

t) Extensive experience in PC refresh, the use of Ghost software, evaluating, beta testing, installing upgrades/patches for OSs and desktop applications, Virus/Spyware removal experience, remote support – RDP/Remote Assistance, SSL/VPN, Citrix, and in the use of trouble ticket and asset tracking systems (i.e. Remedy).
u) Ability to Update Application Software (e.g., Powertools, Coade Caesar II, Solidworks, etc.)
v) Experience with complex Non-Uniform and heterogeneous environments.
w) Advanced experience with Windows (XP, 7, Server), UNIX/Linux (Red Hat, CentOS, Fedora, Ubuntu, MacOS)
x) Programming experience in applicable languages (e.g., C, C++, FORTRAN).
y) Experience with VMWare Fusion 2, Mac OSX, VERITAS Backup Exec
z) Experience with Symantec Endpoint Protection integration with complex software.